

F/G 13/8

SEP 80

DTIC/BIB-80-04

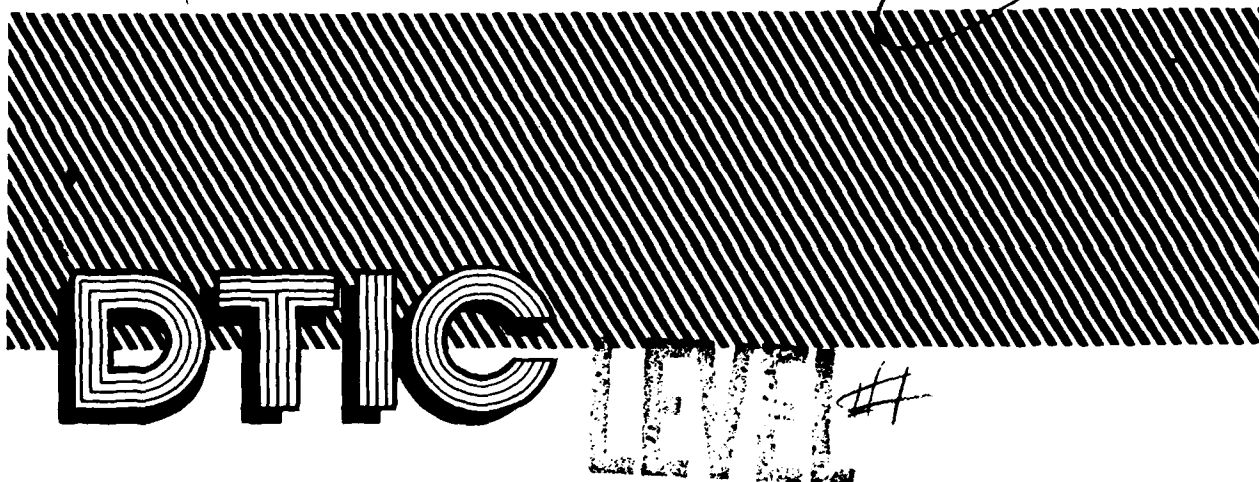
NL

103
20 20 20

2020-2021

UNCLASSIFIED

AD A089500



DTIC/BIB-80-04

AD-A089 500

ETCHING

A DTIC BIBLIOGRAPHY

DTIC-TOS
Cameron Station
Alexandria, Va. 22314

SEPTEMBER 1980

Approved for public release;
distribution unlimited.

DTIC
ELECTE
SEP 18 1980
S A

DEFENSE TECHNICAL INFORMATION CENTER
DEFENSE LOGISTICS AGENCY
Cameron Station
Alexandria, Va. 22314

UNCLASSIFIED

DDC FILE COPY

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
14 DTIC/BIB-80-04	AD-A089 500	
4. TITLE (and Subtitle)		5. TYPE OF REPORT & PERIOD COVERED
(6) Etching.		(9) Report Bibliography Jan 1959 - Feb 1980
7. AUTHOR(s)		6. PERFORMING ORG. REPORT NUMBER
		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
Defense Technical Information Center Cameron Station Alexandria, Virginia 22314		PE 65601S
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE
		(11) Sept 1980
		13. NUMBER OF PAGES
		209
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
(12) 207		Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
Supersedes AD-763 100		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
<ul style="list-style-type: none"> * Etching * Bibliographies Chemical Milling Surface Properties Etched Crystals 		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
<p>This bibliography is a compilation of unclassified/unlimited reports on etching. The collection of references primarily deal with the capabilities and limitation of etching techniques, materials for which they are suitable, and the different etchants and solutions used in the process. The four computer-generated indexes provided are Corporate Author-Monitoring Agency, Subject, Title, and Personal Author.</p>		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED 394 981M
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

F O R E W O R D

This bibliography contains 263 unclassified-unlimited citations on *Etching*.

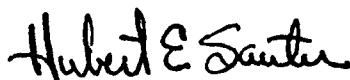
Entries have been selected from references processed into the Defense Technical Information Center data bank from January 1959 through February 1980.

This report supersedes DDC report bibliography on *Etching*, AD-763 100, DDC-TAS-73-78, dated July 1973.

Individual entries are arranged in AD number sequence under the heading bibliographic references. Computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY

OFFICIAL



HUBERT E. SAUTER
Administrator
Defense Technical Information Center

C O N T E N T S

	<u>Page</u>
FOREWORD.	iii
AD BIBLIOGRAPHIC REFERENCES.	1

INDEXES

CORPORATE AUTHOR/MONITROING AGENCY.	0-1
SUBJECT.	D-1
TITLE.	T-1
PERSONAL AUTHOR.	P-1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-8008 190 13/8 13/5

NORTHROP CORP HAWTHORNE CALIF AIRCRAFT DIV

Development of Corrosion Resistant Surface
Treatments for Aluminum Alloys for Spot-
Weld Bonding.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Feb 74-1 Feb 75.
MAR 75 125P Bowen, R. B. ; Herfert, R.

E. ; Wu, K. C. ;

REPT. NO. NOR-75-51

CONTRACT: F33615-74-C-5027

PROJ: AF-7340

TASK: 734002

MONITOR: AFML TR-75-69

UNCLASSIFIED REPORT

DESCRIPTORS: (*Spot welding, Bonding), (*Spot
welds, Bonding), (*Adhesive bonding, Spot
welds), (*Aluminum alloys, *Corrosion
inhibition), Adhesives, Surfaces, Treatment,
Alumina, Hydrates, Corrosion resistance,
Etching, Sealing compounds,
Strength (Mechanics), Formulations,
Microstructure, Aircraft, Airframes

IDENTIFIERS: FPL etch, Boehmite, A-13968
adhesives

(U)

(U)

IAC ACCESSION NUMBER: MCIC-096582

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The objective of this program was to develop a
corrosion resistant spot-weld bonding system for
aluminum aircraft primary structures. Anodizing and
chemical surface treatment were investigated.
Chemical and microscopic techniques indicated that
the most suitable corrosion resistant surface on
aluminum should be a boehmite surface, alpha
Al₂O₃.H₂O. Many anodizing and chemical
treatment systems were able to produce this surface
oxide; however, most of these systems produced
surfaces that either showed poor corrosion resistance
or could not be spot-welded. A treatment consisting
of the standard FPL etch followed by 90-minute
sealing in boiling sodium dichromate solution gave a
weldable surface with good corrosion resistance.
The best adhesive found was B.F. Goodrich
A-13968.

(U)

AD-8008 190

UNCLASSIFIED

PAGE

AD-8002 612

UNCLASSIFIED

1

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-8002 612 9/5 13/8

UNITED AIRCRAFT RESEARCH LABS EAST HARTFORD CONN

Sputtering Technology for Improved Electron
Devices.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan-31 Dec 74,
DEC 74 135P Grantham, D. H. ; Swindal, J.

L. ;

REPT. NO. UARL-N921820-4

CONTRACT: N00019-74-C-0256

UNCLASSIFIED REPORT

DESCRIPTORS: (*Semiconductor devices,
Manufacturing), (*Sputtering, Semiconductor
devices), (*Integrated circuits, Manufacturing),
Semiconducting films, Thin films, Circuit
interconnections, Beryllium oxides, Silicon dioxide,
Heat sinks, Radiofrequency, Vapor deposition,
Amorphous materials, Etching, Substrates,
Gallium, Aluminum, Argon, Copper, Thermal
properties, Electrical properties, Masking

(U)

A viable process for multilevel interconnects was
developed. Silicon dioxide sputtered at a substrate
temperature of 200 C controlled by gallium heat
sinking to a heater block, at argon pressure of 5
millitorr, and at a power density of 14 watts/sq. in.
was demonstrated to have appropriate etching
characteristics and to be virtually free of pinholes.
Pure aluminum and 4% copper in aluminum were
shown to be compatible with the silicon dioxide
process and to give good level-to-level electrical
contact at feedthroughs sputter cleaned just prior to
the metal deposition. Beryllium oxide was deposited
by rf sputtering from a beryllium oxide target and by
reactive rf sputtering from a beryllium target using
oxygen-argon mixtures. In both cases stress levels
in the films deposited were very high, producing
pronounced bowing of substrates. Layers on the
order of 2 micrometers thick shattered silicon
substrates 5 centimeters in diameter and 325
micrometers thick. Reactively sputtered films
deposited at about 3000A/hr. while films rf
sputtered from a beryllium oxide target deposited at
a rate of about 6500A/hr for 500 watts into a 3.5
inch diameter target.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A084 171 11/6 7/4

UNIVERSAL ENERGY SYSTEMS INC DAYTON OHIO

Surface Characterization of Chemically Treated Titanium and Titanium Alloys.

(U)

DESCRIPTIVE NOTE: Interim rept. May-Nov 79,
FEB 80 180P Roche, Alain A.;
CONTRACT: F33615-79-C-5129
MONITOR: AFMAL TR-80-4004

UNCLASSIFIED REPORT

DESCRIPTORS: *Titanium alloys. *Surface chemistry.
*Surface finishing. *Adhesive bonding. Test and
evaluation. Auger electron spectroscopy. Mass
spectroscopy. Secondary. Ions. Electron
spectroscopy. Photoelectron spectra. Scanning.
Sputtering. Etching
IDENTIFIERS: Surface characterization, Secondary
ion mass spectroscopy, Surface treatment

(U)

(U)

A thorough knowledge of adherend surfaces is necessary to adequately evaluate adhesive bond joint performance. Auger Electron Spectroscopy (AES), Secondary Ion Mass Spectroscopy (SIMS), Scanning Electron Microscopy (SEM), and X-Ray Photoelectron Spectroscopy (XPS) were used to characterize the surface topography (roughness, selective etching) composition (relative concentration of alloyed element on surface, contaminated overlayer...) chemical state (titanium or alloy surface oxide, oxy-fluoride...) and oxide thickness of different chemically treated titanium alloys. Seven alloys and the metal were conditioned with seven different chemical treatments. Data from each treated alloy has been compiled to show physical and chemical effects of each treatment on each alloy.

(U)

AD-A084 171

UNCLASSIFIED

PAGE

2

AD-A082 873

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A082 873 11/6 7/4

SASKATCHEWAN UNIV SASKATOON

A Double-Etching Technique for Microstructural Analysis of Steel.

(U)

MONITOR: DRB 13P Lui, M. -W. ; Le May, I. ;
REPRINT-4073

UNCLASSIFIED REPORT

Availability: Pub. in Microstructural Science, v2
p35-47 1974 (No copies furnished by DTIC).

DESCRIPTORS: *Steel. *Microstructure. *Etching.
Electron microscopy. Reprints
IDENTIFIERS: Microstructural analysis

(U)

(U)

Reprint: A Double-Etching Technique for Microstructural Analysis of Steel.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A082 237 9/3 9/5

TEXAS INSTRUMENTS INC DALLAS

IC Fabrication Using Electron-Beam Technology.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 76-30 Jun 79,
FEB 80 70P Varnell, Gilbert L. ;Bartelt,

John ;Reynolds, Jack ;

REPT. NO. TI-03-79-57

CONTRACT: DAAB07-76-C-8105

PROJ: 1L162705AH94

TASK: 04

MONITOR: DELET TR-76-8105-F

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Electron beams, Lithography, Etching, Plasma control, Specifications, Cross sections, Chips(Electronics), Sizes(Dimensions), High density, Random access computer storage, Bipolar systems, Transistor transistor logic, Schottky barrier devices

(U)

IDENTIFIERS: VLSI(Very Large Scale Integration), PE62705A, ASH94, WU33

(U)

The object of this program was to develop a manufacturing capability for standard bipolar circuits of conventional design using existing e-beam direct writing equipment. In particular, a pilot-line demonstration of significant yields of conventional 4-5-micrometer design rule integrated circuits which were fully tested to military specifications for performance, quality and reliability was of paramount importance.

Achievement of this objective then establishes a baseline for direct e-beam writing in production and provides a significant stepping stone for implementation of e-beam technology in VLSI circuit fabrication. The vehicle used for this demonstration was a standard TTL 256-bit bipolar RAM (SN745201A) using a single-level metal, junction isolated, Schottky clamped bipolar process. Emphasis was placed on utilizing a new class of high-speed electron resist (TI-309 and TI-313) in combination with selective plasma etching techniques in order to establish economical next generation VLSI processes.

(U)

AD-A082 237

UNCLASSIFIED

PAGE

3

AD-A081 729

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A081 729 8/7 7/1 13/8

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND FORT MONMOUTH NJ ELECTRONICS TECHNOLOGY/DEVICES LAB

Etching Studies on Singly and Doubly Rotated Quartz Plates.

(U)

DESCRIPTIVE NOTE: Research and development rept.,
JAN 80 12P Vig, John R. ;Brandmayr,

Ronald J. ;Filler, Raymond L. ;

REPT. NO. DELET-TR-80-5

PROJ: 1L162705AH94

TASK: 10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Annual Symposium on Frequency Control (33rd), 30 May-1 Jun 79, Atlantic City, NJ.

DESCRIPTORS: *Quartz, *Plates, *Polishing,

*Surface chemistry, *Etching, Rotation, Quartz resonators, Solutions(Mixtures), Ammonium compounds, Fluorides, Experimental data, Chemical composition, Surface roughness, Electron microscopy

(U)

IDENTIFIERS: Quartz crystals, Rotated quartz plates, Chemical polishing, Etching studies, Etchants, Ammonium bifluorides, Surface morphologies, Scanning electron microscopy, ASH94, PE62705A

(U)

Experiments aimed at finding a chemical polish for the doubly rotated SC-cut have been performed with a variety of etchants. The surface morphologies of etched SC-cut plates depend strongly on the composition of the etching solutions. Some of the solutions evaluated did not produce chemical polishing on either side of the SC-cut plates, some produced chemical polishing on one side but not the other, and some were able to polish both sides. It has also been shown that at least up to 10 MHz, the chemical polishing does not produce a significant degradation for AT-cut quartz crystal resonators.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A081 728

11/6

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OH

Failure Mechanisms and Interphase Chemistry
of Gold Films on Ti6Al4V. Part II.
Etching of Ti6Al4V and its Effect on
Evaporated Gold and Commercial Adhesive
Adhesion.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 78-Oct 79,
JAN 80 39P
REPT. NO. AFML-TR-79-4178-PT-2
PRGJ: 2419
TASK: 02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 1, AD-A081
727.

DESCRIPTORS: *Titanium alloys, *Etching, *Gold
alloys, *Metal films, Failure, Adhesion,
Adhesive bonding, Evaporation, Diffusion,
Surface finishing, Surface chemistry, Degradation,
Selection, Vapor deposition, Boundary layer,
Models

(U)

IDENTIFIERS: Titanium alloy 6Al4V, Interphase
chemistry, Surface treatment

(U)

This work is part of a program which looks at the effects of surface treatments on surface chemistry and morphology of titanium alloys with reference to adhesive bonding. Here gold is vapor deposited on Ti6Al4V which was prepared to simulate conditions of etching and aging which might be encountered during processing and use. Although this model system of gold on Ti6Al4V is not a direct analogy to adhesive bonding, certain similarities do exist and the system provides interesting information on bond failure mechanisms. Surface chemistry changes suggest selective etching of the alpha phase and subsequently larger influence of the alpha phase in bonding. Heating of the gold on Ti6Al4V resulted in improved adhesion, probably by diffusion mechanisms. Exposure to steam resulted in bond degradation in both gold/Ti6Al4V and in adhesive/Ti6Al4V systems. The adhesive bonding results for the etched specimens were compared to expected performance based on 'attachment site' theory.

(U)

AD-A081 728

UNCLASSIFIED

PAGE

4

AD-A081 727

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A081 727

11/6

13/8

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OH

Failure Mechanisms and Interphase Chemistry
of Gold Films on Ti6Al4V. Part I.
Surface Chemistry of Failure Surfaces.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 78-Oct 79,
JAN 80 53P
REPT. NO. AFML-TR-79-4178-PT-1
PRGJ: 2419
TASK: 02

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 2, AD-A081
728.

DESCRIPTORS: *Titanium alloys, *Metal films,
*Etching, *Gold alloys, *Failure(Mechanics),
Chemical bonds, Adhesive bonding, Bonded joints,
Test methods, Surface chemistry, Surface
finishing, Models, Boundary layer, Interactions,
Interfaces, Locust, Layers
IDENTIFIERS: Interphase chemistry, PE62102F,
WUAFML24190244

(U)

(U)

This work is part of a program which looks at the effects of surface treatments on surface chemistry and morphology of titanium alloys with reference to adhesive bonding. Here gold is vapor deposited on Ti6Al4V which was prepared to simulate conditions of etching and aging which might be encountered during processing and use. Although this model system of gold on Ti6Al4V is not a direct analogy to adhesive bonding, certain similarities do exist and the system provides interesting information on bond failure mechanisms. Surface chemical analysis using ISS/SIMS showed that the gold on titanium alloy could model the failure mechanisms on surfaces prepared by methods similar to that in adhesive bonding. ISS/SIMS was found to be a sensitive chemical method to determine locus of failure and the change of composition at interfaces following humid aging and bond testing. Several types of failures appeared to be observed. Fractures which appeared to have occurred by interfacial failure were actually found to be mixed mode failures or failures in a weak boundary layer.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A080 144 20/12 9/1

WESTINGHOUSE RESEARCH AND DEVELOPMENT CENTER PITTSBURGH
PAThe Implantation of Impurity Ions and
Proton Bombardment in Indium Phosphide.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 75-31 Mar 79.

AUG 79 152P Eldridge, G. W. ;

CONTRACT: F44620-75-C-0034

PROJ: 2306

TASK: 81

MONITOR: AFDSR TR-80-0044

UNCLASSIFIED REPORT

DESCRIPTORS: *Indium phosphides, *Gallium arsenides,
*Semiconductors, *Ion implantation, *Proton
bombardment, *Field effect transistors,
Gates(Circuits), Transport properties,
Beryllium, Chromium, Iron, Sulfur, Etching,
Annealing, Glass, Encapsulation, Substrates,
Mobility, Impurities, Efficiency, Activation

IDENTIFIERS: Phosphosilicate glasses, Silicon
dioxide, Silicon nitride, WUAFDSR2306B1,
PE61102F

(U)

(U)

Ion Implantation of InP has been studied from
qualification of substrates through characterization
of the electrical transport properties of the
resulting layers. InP(Fe) is found to have
sufficient resistivity for typical device
applications in contrast to InP(Cr). Residual
damage from grit polishing compromised mobility and
activation efficiency; a bromine-methanol etch polish
yields superior surfaces and reduced residual damage.
This etch-polish reveals either Fe
precipitates or In inclusions in available
InP(Fe) wafers. In contrast to GaAs(Cr),
InP(Fe) has never exhibited anomalous
compensation or conversion phenomena. Qualification
consists of eliminating ingots with excessive
precipitate or inclusion counts; consistent
activation and mobility data are achieved using only
this qualification. Acceptable activation and
mobility can be achieved via 700 C annealing.
Phosphosilicate glass deposited by the CVD
technique provides effective encapsulation to this
temperature.

(U)

AD-A080 144

UNCLASSIFIED

PAGE

5

AD-A080 119

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A080 119 20/12

COLORADO STATE UNIV FORT COLLINS DEPT OF PHYSICS

Sputter Damage in GaAs Exposed to Low
Energy Argon Ions.

(U)

DESCRIPTIVE NOTE: Technical rept.,

NOV 79 15P

Schmidt, H. E. ; Jensen, P.

E. ; Sites, J. R. ;

REPT. NO. SF26

CONTRACT: N00014-76-C-0976

PROJ: RR02102

TASK: RR0210203

UNCLASSIFIED REPORT

DESCRIPTORS: *Sputtering, *Gallium arsenides,
*Damage assessment, Ion beams, Argon, Low
energy, N type semiconductors, Schottky barrier
devices, Barrier coatings, Etching

IDENTIFIERS: PE61153N, WUNR243015

(U)

(U)

Substrates of n-type GaAs were exposed to
charge neutralized argon ion beams of energy ranging
from 50 to 500 eV. Exposure times were 10-30
minutes with a beam density of 1 ma/sq cm. Schottky
barrier diodes were formed on the sputtered surfaces
using gold films. Capacitance and current
measurements showed a marked decrease in barrier
height for samples sputtered surfaces using gold
films. Capacitance and current measurement showed a
marked decrease in barrier height for samples
sputtered with energies > 150 eV, though
rectification persists to higher beam energies.
Chemical etching of the damaged layer to restore
the Schottky barrier height showed that the
characteristic depth of heavy damage was 20-50 A,
increasing with ion beam energy. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A080 106 20/6

WASHINGTON UNIV ST LOUIS MO LAB FOR APPLIED ELECTRONIC SCIENCES

Fresnel Lens and Beam Control in Optical Waveguide. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jun-30 Sep 79,

OCT 79 38P Chang, William S. C. ;

CONTRACT: F49620-79-C-0145

PROJ: 2306

TASK: C2

MONITOR: AFOSR TR-80-0042

UNCLASSIFIED REPORT

DESCRIPTORS: *Fresnel lenses, *Optical waveguides, Beams(Radiation), Beam steering, Control, Phase shift, Lithium compounds, Niobates, Fabrication, Sputtering, Etching, Low costs
 IDENTIFIERS: Lithium niobates, WUAFOSR2306C2, PE61102F (U)

Fresnel Lenses have the potential to out-perform other waveguide lenses. In this project, preliminary design parameters for etched Fresnel lenses in LiNbO3 waveguide has been obtained. Optimum diffused LiNbO3 waveguide structures for the realization of a Fresnel lens have been identified. Reactive sputter etching has been experimentally investigated as a submicron etching technique. Theoretical analyses of the chirped grating as a Fresnel lens have been formulated. (Author) (U)

AD-A080 106

UNCLASSIFIED

PAGE 6

AD-A080 031

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A080 031 9/1 20/12

RENSELAEER POLYTECHNIC INST TROY N Y

Research on Microwave Junction Gate Field Effect Transistors. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jun 76-31 May 79,

DEC 79 15P Ghandhi, S. K. ;

CONTRACT: DAAG29-76-G-0172

MONITOR: ARO 13586.5-EL

UNCLASSIFIED REPORT

DESCRIPTORS: *Field effect transistors, *Gates(Circuits), *Epitaxial growth, *Semiconductor junctions, Microwave equipment, Gallium arsenides, Indium phosphides, Crystal lattices, Arsenic, Overpressure, Etching, Diffusion, Substrates (U)

IDENTIFIERS: Gallium indium arsenide, Indium arsenides, Channel layers, Lattice matching (U)

This program has considered basic problems in the fabrication of junction-gate FET devices. We have shown that Ga(x)In(1-x)As layers can be grown of the appropriate composition ($x = 0.468 \pm \text{or} - 3\%$) required to obtain a good lattice match to indium phosphide substrates. Additionally, techniques have been developed for in-situ etch of substrates prior to epitaxial growth. Diffusion and masking junction techniques have been developed for making junctions with no enhanced lateral diffusion. These diffusions are carried out in the absence of an arsenic overpressure, and are limited to n-type layers at the present time. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A079 812 9/1 13/8

WESTINGHOUSE RESEARCH AND DEVELOPMENT CENTER PITTSBURGH
PAIndium Phosphide for High Frequency Power
Transistors.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 21 Feb 78-21

Mar 79, 79 95^W Wick, V. L. ; Eldridge, G.
 W. ; Clarke, R. C. ; Drive, M. C. ;
 REPT. NO. 243-03-T1
 CONTRACT: N00014-78-C-0254, DARPA Order-3535

UNCLASSIFIED REPORT

DESCRIPTORS: *Indium phosphides, *Field effect
 transistors, *High frequency, *Power equipment,
 Microwaves, Fabrication, Processing, Etching,
 Epitaxial growth, Layers, Ion implantation,
 Vapor phases, Benefits, Insulation
 IDENTIFIERS: Gate studies, High frequency power
 transistors, PEG101E

(U)

(U)

This report covers the first year of studies aimed
 at determining the utility of InP for fabricating
 power microwave field effect transistors (FET).
 The initial phase of the work was concentrated on
 developing the technology necessary to complete a
 power FET based on current design philosophy. Ion
 implantation and vapor phase epitaxy (VPE) results
 are presented as a means for providing an active
 channel for the device. Further work is planned for
 VPE channels because of the potential benefits of
 buffer layers under development. Processing
 technology (etching, ohmic contacts) is reviewed.
 In addition, a review of gate technology is
 provided since this is the largest technology issue
 for the InP FET. The results of the gate
 studies has been a concentration of effort on
 developing a JFET during the conclusion of the
 program. (Author)

(U)

AD-A079 812

UNCLASSIFIED

PAGE

7

AD-A079 528

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A079 528 19/6 11/6 13/8

ROCK ISLAND ARSENAL IL ENGINEERING DIRECTORATE

Automated Chromium Plating Line for Gun
Barrels.

(U)

DESCRIPTIVE NOTE: Technical rept.,

SEP 79 32P Bish, Joseph M. ; Rowe, John

D. ;

REPT. NO. SARRI-EN-TR-79-04

UNCLASSIFIED REPORT

UESCRIPTORS: *Gun barrels, *Chromium alloys,

*Electropolishing, Electrolytic polishing,

Automation, Prototypes, Small arms, Production,

Loading(Handling), Etching, Tanks(Containers),

Processing

IDENTIFIERS: Chromium plating, Gun tubes, LPN-

PRON-A1-2-60517-03-M2-M2

(U)

(U)

This project was undertaken to establish a
 prototype automated chromium plating line for
 processing small caliber gun tubes. The automated
 line consists of a loading rack, electropolish tank,
 cold water rinse tanks, hot water rinse tank,
 Chromium reverse etch tank and a chromium plating
 tank. The process involves automatic transference
 of racks containing the gun tubes to the various
 tanks in accordance to a programmed cycle.

Parameters selected for the automated process were
 2 asi and 4.5-minute process time to remove
 approximately 1.0 mil of stock during electropolish;
 and 2.5 asi and 50-minute plating time to deposit 1.0
 mil of chromium plate. The feasibility of the
 automated process was shown and 12 out of 24
 processed gun tubes were within the acceptable
 internal dimension range. Six additional gun tubes
 were within 0.1 to 0.2 mil of the acceptable bore
 diameter range. The quality of the chromium plate
 was satisfactory in all cases. The major difficulty
 in the automated process is the control of stock
 removal during the electropolish cycle. The
 elimination of the electropolish sequence is
 recommended with the use of rotary swaged gun tubes
 sized to pre-plating dimensions. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A078 202 20/6 13/8

CINCINNATI UNIV OH SOLID STATE ELECTRONICS LAB

A Geodesic Optical Waveguide Lens
Fabricated by Anisotropic Etching.

(U)

APR 79 4P Nauman, A. ; Boyd, J. T. ;
 CONTRACT: AFOSR-76-3032
 PROJ: 2305
 TASK: B1
 MONITOR: AFOSR TR-79-1123

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Physics Letters,
 v35 n3 p234-236, 1 Aug 79.

DESCRIPTORS: *Optical lenses, *Optical waveguides,
 Etching, Reprints (U)
 IDENTIFIERS: Anisotropic etching, Glass reflow,
 PE61102F, WUAFOSR2305B1 (U)

Reprint: A Geodesic Optical Waveguide Lens
 Fabricated by Anisotropic Etching.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A077 561 20/8

COLORADO STATE UNIV FORT COLLINS DEPT OF PHYSICS

Broad Beam Ion Source Operation with Four
Common Gases.

(U)

DESCRIPTIVE NOTE: Technical rept.,
 SEP 79 21P Pak, Sung-Jae ; Sites, James
 R. ;
 REPT. NO. SF24
 CONTRACT: N00014-76-C-0976
 PROJ: RR02102
 TASK: RR0210203

UNCLASSIFIED REPORT

DESCRIPTORS: *Ion beams, *Ion sources, Gases,
 Krypton, Argon, Oxygen, Nitrogen, Sputtering,
 Etching, Flow rate, Gas flow (U)
 IDENTIFIERS: PE61153N, WUNR243015 (U)

A Kaufman-type broad beam ion source, used for
 sputtering and etching purposes, has been operated
 with Ar, Kr, O₂ and N₂ gas inputs over a wide
 range of beam energies (200-1200 eV) and gas flow
 rates (1-10 sccm). The maximum ion beam current
 density for each gas saturates at about 2.5 mA/sq.
 cm. as gas flow is increased. The discharge
 threshold voltage necessary to produce a beam and the
 beam efficiency (beam current/molecular current),
 however, varied considerably. Kr had the lowest
 threshold and highest efficiency. Ar next, then
 N₂ and O₂. The ion beam current varied only
 weakly with beam energy for low gas flow rates, but
 showed a factor of two increase when the gas flow was
 higher. (Author) (U)

AD-A078 202

UNCLASSIFIED

PAGE

8

AD-A077 561

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A076 950 11/6 11/1 13/8

ROCKWELL INTERNATIONAL THOUSAND OAKS CA SCIENCE CENTER

Surface Treatment for Aluminum Bonding. (U)

DESCRIPTIVE NOTE: Final technical rept. 28 Jul 78-15
Jul 79.

OCT 79 204P Smith, Tennyson ;
REPT. NO. SC5180.17FTR
CONTRACT: DAAK10-78-C-0274

UNCLASSIFIED REPORT

DESCRIPTORS: *Aluminum alloys, *Adhesive bonding, *Surfaces, *Surface chemistry, *Processing, Shear strength, Corrosion, Endurance(General), Wedges, Etching, Chromates, Experimental design, Fracture(Mechanics), Bonded joints, Surface finishing, Input, Systems analysis, Room temperature, Water

IDENTIFIERS: Surface treatment, Wedge tests, Shear tests, Sulfochrom, Nonchromate, Water soak tests (U)

At present the most widely used method for treating aluminum prior to bonding is the sulfochrom etch process (FPL, etch). Due to the carcinogenic nature of chromates, various companies and government agencies have been attempting to find a more durable nonchromate-containing systems which can be used to treat aluminum prior to bonding. The objective of this project was to discover a nonacid (nonchromate) surface treatment for Al 2024-T3 that would be both strong and durable. Initial studies indicated that a simple degrease and water soak process (STAB(1)) would provide strong durable joints. However, further testing revealed this process to be hard to reproduce on a consistent basis. A second process (STAB(2)) was discovered that was equally as simple but was also difficult to reproduce. A third process, even more simple (STAB(3)) was discovered which did prove reproducible. This process eliminates the degrease step and involves no energy input (room temperature dip in super-concentrated sodium hydroxide). There are only three steps involved, a sodium hydroxide solution dip, a rinse and dry. This report gives the details of these three processes. (U)

AD-A076 950

UNCLASSIFIED

PAGE

9

AD-A076 864

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A076 864 11/6 20/11 13/8

AUSTRALIAN DEFENCE SCIENTIFIC SERVICE MELBOURNE

The Nature of the White-etching Surface Layers Produced During Reaming Ultra-high Strength Steel. (U)

OCT 74 9P Turley, D. M. ;

UNCLASSIFIED REPORT

Availability: Pub. in Materials Science and Engineering, v19 p79-86 1975 (No copies furnished by DTIC).

DESCRIPTORS: *Etching, *Holes(Openings), *Steel, *Plastic deformation, High strength alloys, Martensite, Abrasion, Friction, Grinding, Layers, Surfaces, Reamers, Microstructure, Australia, Reprints (U)
IDENTIFIERS: White etching (U)

Reprint: The Nature of the White-etching Surface Layers Produced During Reaming Ultra-high Strength Steel.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A075 975 9/1 13/8 11/3

HUGHES AIRCRAFT CO FULLERTON CALIF

Semi-Additive Processes for Fabrication of
Printed Wiring Boards.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 76-31 Dec 78,
JUN 79 140P Quintana, Jack ;

REPT. NO. FR 79-12-190

CONTRACT: DAAK01-76-C-110C

UNCLASSIFIED REPORT

DESCRIPTORS: *Printed circuit boards, *Fabrication,
*Processing, Adhesives, Coatings, Laminates,
Folts(Materials), Additives, Test and
evaluation, Requirements, Thin films, Copper
compounds, Etching, Charge carriers
IDENTIFIERS: Semiadditive process

(U)
(U)

Printed wiring boards fabricated by semi-additive
processes from four laminate types have met the
requirements of MIL-P-13949, MIL-P-5110, and
selected tests of MIL-P-55640. Laminate types
consisted of ultra-thin copper with peelable carrier,
ultra-thin copper with etchable carrier, sacrificial
foil, and adhesively-coated nonclad. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A075 541 13/5 20/11

MATERIALS RESEARCH LAB INC GLENWOOD ILL

Fracturing Characteristics of Adhesive
Joints.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Feb 77-15 Sep 78,
SEP 78 124P Mostovoy, Sheldon ; Ripling,
E. J. ;

CONTRACT: N00019-77-C-0256

UNCLASSIFIED REPORT

DESCRIPTORS: *Bonded joints, *Adhesive bonding,
*Fracture(Mechanics), Cracking(Fracturing),
Crack propagation, Stress corrosion, Anodic
coatings, Etching, Adhesives, Finite element
analysis, Mathematical models

(U)

IAC ACCESSION NUMBER: PL-034931

IAC DOCUMENT TYPE: PLASTIC-MICROFILM-

Test methods were developed by MRL for evaluating
the fracture mechanics parameters of adhesive joints.
These tests, were designed for measuring crack
resistance under Mode I, combined Mode I and
II, and combined Mode I and III loading.

All of the tests can be applied to monotonically
increasing loads, static loads in an environment,
i.e., stress corrosion cracking, or to crack growth
rate under fatigue loading. There does not appear
to be a general 'law' for describing the effect of
adding some shear (Mode II or III) onto opening
mode loads; rather, the difference between pure and
mixed mode loading depends on the load-time profile.
Hence, mixed-mode loading must be treated
differently for each type of loading. A section on
bond manufacturing and testing details compares the
phosphoric acid anodizing (PAA) aluminum adherend
treatment to the chromic acid etch (FPL) on the
basis of resistance to stress corrosion cracking in
the wedge test. Application of linear elastic
fracture mechanics to the prediction of structural
life based on the use of finite element as well as an
energy analysis are also discussed.

(U)

IAC SUBJECT TERMS: P--(U)Joint strength, Test
methods, Fracture mechanics, Bonded joints, Crack
propagation, Stress corrosion, Stress analysis,
Anodized surfaces, Surface treatments, Adhesives,
Finite element analysis, Cantilever beams, Acid

AD-A075 541

AD-A075 975

UNCLASSIFIED

PAGE

10

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A075 514 20/2 11/4 20/8 14/5

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Enhanced Heteroepitaxy. (U)

DESCRIPTIVE NOTE: Semiannual technical summary 1 Jul-31 Dec 78. (U)

DEC 78 13P McWhorter, Alan L.;
CONTRACT: F19628-78-C-0002, ARPA Order-3336
MONITOR: ESD TR-79-193

UNCLASSIFIED REPORT

DESCRIPTORS: *Crystallography, *Silicon, *Films,
*Epitaxial growth, Metal films, Amorphous
materials, Lasers, Single crystals, Substrates,
Fused silica, Thin films, Crystallization, X ray
photography, Lithography, Holography, Etching,
Heterojunctions (U)IDENTIFIERS: Silicon films, Graphoepitaxy,
Single crystal films, Heteroepitaxy, Laser
crystallization, Holographic lithography, Ion
etching, PE61101E (U)

Uniform crystallographic orientation of silicon films, 500 nanometers thick, has been achieved on amorphous fused silica substrates by laser crystallization of amorphous silicon deposited over surface-relief gratings etched into the substrates. The gratings had a square-wave cross section with a 3.8 micrometers spatial period and a 100-nanometers depth. The less than 100 more than directions in the silicon were parallel to the grating and perpendicular to the substrate plane. We propose that orientation of overlayer films induced by artificial surface patterns be called graphoepitaxy. (Author)

AD-A075 514

UNCLASSIFIED

PAGE

11

AD-A074 282

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A074 282 11/6 7/1

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Preferential Chemical Etching of Blazed
Gratings in (110)-Oriented GaAs, (U)JUN 78 3P Shams, Mohammad Kazem ;Botez,
Dan ;Wang, Shyh ;
CONTRACT: DAAG29-74-G-0070, NSF-ENG76-08292
MONITOR: ARO 11833.33

UNCLASSIFIED REPORT

Availability: Pub. in Optics Letters, v4 n3 p96-98
Mar 79 (No copies furnished by DDC).DESCRIPTORS: *Gallium arsenides, *Etching,
*Chemical engineering, *Gratings (Spectra),
Reprints (U)

IDENTIFIERS: Blazing, Blazed gratings (U)

Reprint: Preferential Chemical Etching of Blazed
Gratings in (110)-Oriented GaAs.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A071 158

20/6

9/1

LASER DIODE LABS INC METUCHEN N J

Light Emitting Diodes for Fiber Optic Communications.

(U)

DESCRIPTIVE NOTE: Quarterly rept. nos. 6 and 7, 1 Jan-30 Jun 78,

JUN 78

36P

Gennaro, Albert ;

CONTRACT: DAAB07-78-C-8135

UNCLASSIFIED REPORT

DESCRIPTORS: *Fiber optics, *Light emitting diodes, *Optical communications, Aluminum gallium arsenide, Heterojunctions, Etching, High velocity, Wafers, Fabrication, Industrial production, Chips (Electronics), Test and evaluation, Life tests, Test equipment

IDENTIFIERS: LPN-DA-2769778

(U)

(U)

The design and fabrication of high speed etched-well light emitting diodes for fiber optic communications is discussed with regard to materials synthesis via LPE, wafer fabrication, and device assembly in a manufacturing environment.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A071 064

6/5

6/12

ARMY INST OF DENTAL RESEARCH WASHINGTON D C

Criteria for Successful Composite Restorations.

(U)

DESCRIPTIVE NOTE: Rept. for Feb-Jun 79, JUN 79

16P

Lorton, Lewis ; Brady, John ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Dentistry, *Oral health, *Dental prostheses, Dental caries, Etching, Military medicine, Teeth

(U)

Composite resin restorations, while not as manipulation-sensitive as some other restorative materials, must be handled correctly for maximum adaptation, and marginal seal. This article discusses criteria for cavity finishing, marginal form, etching, and dentin protection which are vital for success. (Author)

(U)

AD-A071 158

UNCLASSIFIED

PAGE

12

AD-A071 064

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A068 656 9/5 20/7

TEXAS INSTRUMENTS INC DALLAS

IC Fabrication Using Electron-Beam Technology.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 9, 1 Sep-1 Dec 78.

APR 79 13P Varnell, Gilbert L.; Chiang, Shang-Yi; Reynolds, Jack;

REPT. NO. TI-03-79-01

CONTRACT: DAAB07-76-C-8105

MONITOR: DELET TR-76-8105-9

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Electron beams, Writing, Etching, Plasma control, Random access computer storage, Bipolar systems, Fabrolar system, Direct current, Alternating current, Oxides, Specifications, Cross sections, Semiconductors, Chips(Electronics), Sizes(Dimensions)

IDENTIFIERS: LPN-DA-2765631

(U)

A significant number (117) of 256-bit bipolar RAMs have been fabricated utilizing all e-beam direct slice writing and plasma etching. These devices pass all dc and ac electrical specifications including operating speed. A previous lot had device characteristics that were slower than specification due to an improper oxide thickness. One slice yielded 40% at dc probe compared to a high of 26% on one slice for a parallel photoresist lot. However, the lot yield for the e-beam slices was only 74% compared to 17% for the parallel photoresist lot. The reduced e-beam yield was attributed to an operator error during plasma etching of the contact O.R. and was not due to e-beam direct slice writing. Another lot of material is in progress (at metal) with tighter plasma etching control to complete the device quantity (500) required for completion of the contract. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A068 348 9/1 20/6 17/2

LASER DIODE LABS INC METUCHEN N J

Light Emitting Diodes for Fiber Optic Communications.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 5, 1 Oct-31 Dec 77,

77 35P Gennaro, Albert;

CONTRACT: DAAB07-76-C-8135

UNCLASSIFIED REPORT

DESCRIPTORS: *Light emitting diodes, *Fiber optics, *Optical communications, Gallium arsenides, Aluminum arsenides, Heterojunctions, Etching, High velocity, Wafers, Fabrication, Industrial production, Chips(Electronics), Test and evaluation, Life tests, Test equipment

(U)

The design and fabrication of high speed etched-well light emitting diodes for fiber optic communications is discussed with regard to materials synthesis via LPE, wafer fabrication, and device assembly in a manufacturing environment.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A068 165 9/1 20/12

TRW INC LAWDALE CALIF SEMICONDUCTOR DIV

Monolithic 20W 2GHz Transistor and Monolithic
5W 4GHz Transistor.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 6, 14 Sep-13 Dec
78,

FEB 79 20P Schreyer, George ;
CONTRACT: DAAB07-77-C-0431

UNCLASSIFIED REPORT

DESCRIPTORS: *Transistors, *Transistor amplifiers,
*Monolithic structures(Electronics), Fabrication,
Photolithography, Wafers, Etching, Grooving,
Passivity, Platinum, S band
IDENTIFIERS: Vee Grooves, Metalization, Ohmic
Contacts, Photoresist Processing, LPN-DA-
2779811

(U)

(U)

A lot of L-10 devices was fabricated and provided
8 watts in saturation, only 1dB less the contract
goal. A new passivation process was developed to
provide an excellent etch mask against hydrazine.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A066 978 11/2 20/11

RENSELAER POLYTECHNIC INST TROY N Y DEPT OF MATERIALS
ENGINEERING

Chemical Durability Improvement and Static
Fatigue of Glasses.

(U)

DESCRIPTIVE NOTE: Annual rept. no. 1, 1 Apr 78-28 Feb
79,

MAR 79 33P Tomozawa, Minoru ;
CONTRACT: N00014-78-C-0315

UNCLASSIFIED REPORT

DESCRIPTORS: *Glass, *Fatigue(Mechanics),
*Static loads, Surfaces, Heat treatment, Boron
compounds, Silicates, Hydrogen fluoride, Etching,
Aluminum oxides, Concentration(Chemistry),
Stress corrosion, Moisture content, Zirconium
compounds, Coatings

(U)

IAC ACCESSION NUMBER: MCIC-105369

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The Surface layer of heat-treated borosilicate
glasses exhibited lower HF etching rate compared
with the bulk. The chemical analysis of the same
glass indicated an excess Al2O3 concentration in
the surface layer. The low HF etching rate was
attributed to the lowering of the immiscibility dome
by the excess Al2O3 and the consequent shift of
the composition. A prolonged heat-treatment of
glasses produced a surface stress layer. This
surface stress was found to change its sign when the
glass was heat-treated in wet atmosphere. The
surface stress was attributed to the different water
content in the surface layer from that in the bulk.
Chemical durability, especially the etching rate of
a glass in hot NaOH solution was found to be
reduced by coating the glass with Zr alcoxide.
The Zr compound appears to deposit on the etched
surface continuously protecting the glass. Direct
confirmation of the stress corrosion, i.e., the
stress- accelerated reaction of glass with aqueous
solution was attempted. Preliminary investigation
showed that reactions are accelerated by tensile
stress and retarded by compressive stress.
(Author)

(U)

IAC SUBJECT TERMS: M--(U)GLASSES, BOROSILICATE GLASS,
HEAT TREATING, SURFACE LAYERS, ETCHING, CHEMICAL REACTIONS,
AD-A066 978

AD-A068 165

UNCLASSIFIED

PAGE

14

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A065 360 11/1 11/6 13/13

ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DOVER NJ
LARGE CALIBER WEAPON SYSTEMS LABA Round-Robin Evaluation of Adhesive
Bonding Processes Related to the Shelter
Industry.

DESCRIPTIVE NOTE: Technical rept.,

NOV 78 87P Wegmen, Raymond F.; Russell,
William J.; Garnis, Elizabeth A.; Levi, David
W.;

REPT. NO. ARLCD-TR-78047

MONITOR: GIDEP.581E E146-0330, AD-E400 268

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *Adhesives, *Adhesive bonding,
*Aluminum alloys, *Metal metal bonds, Surfaces,
Cleaning, Etching, Thickness, Honeycomb
structures, Shelters, Humidity, Stress testing,
Shear strength, Statistical analysis, Interfaces,
Stress corrosionIDENTIFIERS: *Primers(Coatings), Aluminum
alloy 6061, Aluminum alloy 5052

(U)

(U)

IAC ACCESSION NUMBER: PL-031972

IAC DOCUMENT TYPE: PLASTIC -HARD COPY--

Metal parts of 5u2 H 34 and 6061 T-6 aluminum
alloys were supplied to five companies with the
request to treat the parts in their production
cleaning facilities. A portion of the parts were to
be bonded as prepared and others were to be primed
and then bonded. The standard cleaning method was
the FPL etch. The primer used was BR 127, with
two companies supplying extra panels bonded with FM
47. The adhesive used was Reliabond 7114, with
the exception of one set which was bonded with
Hysol En 9601 adhesive. Both lap shear and
wedge test panels were prepared, bonded, and supplied
for testing. Lap shear tests were run at 23
C(73F), 60 C(140F) and 93 C(200F). Lap
shear tests at 60 C after 100 hr and 1000 hr
immersion in 60 C water were run to predict
durability. ASTM D 2919 durability tests at 60
C/95%RH and wedge tests at 60 C/95-100%RH
were also carried out. The results indicate that
the FM 47 primer is not as thickness-sensitive as
the BR 127 primer.

(U)

AD-A065 360

UNCLASSIFIED

PAGE

15

AD-A064 770

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A064 770 9/2 13/8 9/5

TEXAS INSTRUMENTS INC DALLAS

IC Fabrication Using Electron-Beam
Technology.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 8, 1 Jun-1 Sep
78,JAN 79 35P Varnell, Gilbert L.; Chiang,
Shang-Yi; Reynolds, Jack;

REPT. NO. 71-03-78-51

CONTRACT: DAAB07-76-C-8105

MONITOR: DELET IR-76-8105-8

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Electron beams,
*Bipolar transistors, *Random access computer
storage, Monolithic structures(Electronics),
Pilot plants, Plasmas(Physics), Fluorides,
Costs, Reduction, Etching, Oxides, Silicon
IDENTIFIERS: Operating speeds, Electron beam
resists, Plasma etching, LPN-DA-2769631

(U)

(U)

All of the required environmental and electrical
tests of the first article 256-bit Bipolar RAM
devices (50) were completed this quarter.
These units passed all of the electrical
measurements at 0 C, 25 C, and 70 C.However, the maximum operating speed of the units
was about 20% slower than desired due to the
electron resist being inadvertently removed during
the contact oxide etch step. Fabrication of the
pilot production units has begun and these units
should pass all specifications including operating
speed. (AL*hor)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A064 431 10/2 20/12 22/2

SOLAREX CORP ROCKVILLE MD

Nonreflecting Vertical Junction Silicon
Solar Cell Optimization.

(U)

DESCRIPTIVE NOTE: Final rept. 15 May 76-31 Aug 78,
NOV 78 71P Wohlgemuth, John H. ; Wrigley,

C. V. ;

CONTRACT: F33615-75-C-2058

PROJ: 3145

MONITOR: AFAPL TR-78-9.

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Semiconductor diodes,
*Photovoltaic effect, Charge Carriers,
Photolithography, Radiation hardening, Silicon,
Grooving, Wafers, Mobility, Etching,

Spaceborne

(U)

IDENTIFIERS: High efficiency, Vertical junction
solar cells, Spectral response, PE62203F

(U)

This research program has resulted in the development of high conversion efficiency radiation resistant vertical junction silicon solar cells. New techniques of oxidation growth and the use of photolithography enable the use of an orientation dependent etch to produce grooves 5 - 10 microns wide and up to 100 microns deep. These silicon wafers have been processed into solar cells with all processes performed at temperatures compatible with producing high efficiency solar cells. Theoretical calculations of the expected current as a function of radiation dose have been performed. An explanation of the observed open-circuit voltage is provided. Vertical junction solar cells have been fabricated with AMO conversion efficiencies greater than 14%. These cells have shown superior radiation resistance. Vertical junction cells have been fabricated in 2cm x 2cm, 2cm x 4cm and 2cm x 6cm sizes with no size dependence on efficiency or yield.

(U)

(Author)

AD-A064 431

UNCLASSIFIED

PAGE

16

AD-A064 373

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A064 373 13/8 11/6

BELL HELICOPTER TEXTRON FORT WORTH TEX

Evaluation of Non-Chromated Etch for
Aluminum Alloys (P-Etch).

(U)

DESCRIPTIVE NOTE: Quarterly technical rept. no. 1, 27
Sep-30 Dec 78.

NOV 78 7P

REPT. NO. BHT-699-099-104

CONTRACT: DAAK10-78-C-0398

UNCLASSIFIED REPORT

DESCRIPTORS: *Aluminum alloys, *Etching, *Adhesive
bonding, Solutions (Mixtures), Anodic coatings,
Phosphoric acids, Chromic acid, Chromates,
Sulfuric acid, Iron compounds, Sulfates

(U)

IDENTIFIERS: P etch

(U)

The purpose of the work performed under this program is to evaluate the new chromate free etchant developed by US Army (ARRADCOM) for use in the preparation of aluminum alloys for adhesive bonding. The objective of the program is to generate data which will determine the suitability of the etchant for production use. It will establish the operational control procedures necessary for scale-up to production size and the impact of the solution on existing state-of-the-art waste disposal techniques will be studied. The surfaces produced will be studied to establish their chemical and physical nature. Selected adhesives will be used to explore the effects of solution concentration limits, solution life and storage time prior to bonding, as well as resistance to water immersion, high humidity, salt spray, heat, and cold, and immersion in fuel, lubricating oil and hydraulic fluid. In each case where applicable, panels prepared by the standard FPL etch treatment will be used as controls. The P-Etch will be used as a pretreatment prior to chromic acid and phosphoric acid anodize, and the resultant anodic treated surfaces will be tested for bondability and durability of the bonded joints.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A061 758 13/8 11/1

BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

Anodize Optimization and Adhesive Evaluations
for Repair Applications.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 76-30 Jul 78,
JUL 78 123P Locke, M. C. ; Horton, R.
E. ; McCarthy, J. E. ;
CONTRACT: F33615-73-C-5171
PROJ: 7381
TASK: 06
MONITOR: AFML GIDEP TR-78-104, E146-1186

UNCLASSIFIED REPORT

DESCRIPTORS: *Adhesive bonding, *Phosphoric acids,
*Anodic coatings, Aluminum alloys, Surfaces,
Adhesives, Preparation, Etching, Repair,
Vacuum apparatus, Autoclaves, Curing
IDENTIFIERS: PANTA(Phosphoric Acid Non-Tank
Anodizing), Aluminum alloy 2024,
WUAFML73810677, PE62102F

(U)

(U)

IAC ACCESSION NUMBER: MCIC-104390 PL-030967

IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--

This report covers a two-task follow-on program to
investigate phosphoric acid non-tank anodize process
optimization and evaluation of adhesive/surface
preparation combinations. Work completed in Task
I included investigating non-tank anodizing process
variables of voltage, time, temperature, and rinse
delay. Other parameters studied included the effect
of anodizing over titanium and aluminum fasteners,
battery anodizing, anodizing mode, and identification
of common errors occurring in non-tank anodizing.
Following the anodizing variable investigation,
bond verification tests were conducted to assess
bondability of representative RT, 250 F, and 350
F cure adhesive systems. This work served as a
basis for selecting the phosphoric acid non-tank
anodize process parameter/conditions for Task II.
The Task II work is reported in AFML-TR-78-
7. Task II was aimed at developing a data base to
facilitate repair bonding. Surface preparation
methods including optimized FPL etch, and two hand-
clean procedures, phosphoric acid non-tank anodize
(PANTA) and Passad 1105, were evaluated.

(U)

AD-A061 758

UNCLASSIFIED

PAGE

17

AD-A061 791

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A061 721 9/5 20/7

TEXAS INSTRUMENTS INC DALLAS

IC Fabrication Using Electron-Beam
Technology.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 7, 1 Mar-1 Jun
78,
AUG 78 20P Varnell, Gilbert L. ; Bartelt,
John L. ; Owens, Robert A. ; Reynolds, Jack ;
Robbins, Roger A. ;
REPT. NO. TI-03-78-32
CONTRACT: DAAB07-76-C-8105

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Etching,
*Electron beams, Random access computer storage,
Memory devices, Bipolar systems,
Plasmas(Physics), Oxides, Removal,
Defects(Materials), Industrial production,
Yield

(U)

A New positive electron resist (TI-313) has
been implemented for fabrication of 256-bit bipolar
RAMs. This TI-313 resist has allowed plasma
etching at each oxide removal step in the process.
The pinhole data on this resist after oxide etch is
comparable with that measured on the best standard
negative photoresists. Previous attempts at
fabricating the 256-bit bipolar RAMs have failed
due to the high number of defects in the oxide caused
by an inherent problem with PBS electron resist
during wet etching. In addition, a change was made
from the double-level metal 256-bit bipolar RAM
(54S300) to the single-level metal 256-bit
bipolar RAM (74S301A). This change was made
because the TI-Houston production facility was
achieving extremely low yields on the 54S200/300
and had discontinued production. These changes have
allowed fabrication of functional devices during this
quarter. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A061 460 9/2 9/3 13/8

TEXAS INSTRUMENTS INC DALLAS

IC Fabrication Using Electron-Beam Technology.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 6, 1 Dec 77-1 Mar 78.

MAY 78 23P Varnell, Gilbert L. ;
Williamson, Ronald A. ; Bartelt, John L. ; Owens,
Robert A. ; Reynolds, Jack ;
REPT. NO. TI-03-78-21
CONTRACT: DAAB07-76-C-8105

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Electron beams,
*Fabrication, *Memory devices, Etching, Oxides,
Defects (Materials), Random access computer
storage

(U)

IDENTIFIERS: TI-313 positive electron resist, E-
beam writing, Bipolar RAM, RAM (Random Access
Memories)

(U)

A new positive electron resist (TI-313) has been implemented for fabrication of 256-bit bipolar RAMs. This TI-313 resist has allowed plasma etching at each oxide removal step in the process. The pinhole data on this resist after oxide etch is comparable with that measured on the best standard negative photoresists. Previous attempts at fabricating the 256-bit bipolar RAMs have failed due to the high number of defects in the oxide caused by an inherent problem with PBS electron resist during wet etching. In addition, a change was made from the double-level metal 256-bit bipolar RAM (54S300) to the single-level metal 256-bit bipolar RAM (74S301A). This change was made because the TI-Houston production facility was achieving extremely low yields on the 54S200/300 and had discontinued production. These changes should allow fabrication of working devices during the next quarter. (Author)

(U)

AD-A061 460

UNCLASSIFIED

PAGE

18

AD-A061 427

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A061 427 11/2 7/4 9/1

NORTH CAROLINA UNIV AT CHAPEL HILL WILLIAM R KENAN JR LABS OF CHEMISTRY

Chemically Modified Electrodes. XIV.
Attachment of Reagents to Oxide-Free Glassy
Carbon Surfaces. Electroactive RF Polymer
Films on Carbon and Platinum Electrodes.

(U)

DESCRIPTIVE NOTE: Technical rept.,

OCT 78 20P Nowak, R. ; Schultz, F. A. ;
Umaña, M. ; Abruna, M. ; Murray, Royce W. ;
REPT. NO. TR-6
CONTRACT: N00014-76-C-0817

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A049 660.
DESCRIPTORS: *Carbon, *Surface chemistry,
*Electrodes, Polymeric films, Radiofrequency,
plasmas (Physics), Platinum, Ruthenium,
Ferrocenes, Vinyl radicals, Deoxygenation,
Glassy carbon, Surface finishing, Abrasion,
Etching, Nitrogen, Argon
IDENTIFIERS: WUNR359623

(U)

(U)

Reactive, deoxygenated glassy carbon surfaces prepared by mechanical abrasion under nitrogen or argon plasma etching react with selected molecules to yield surfaces with immobilized molecular surface states. Vinyl ferrocene and a ruthenium pyridine complex are immobilized on glassy carbon in this way. Introduction of vinyl ferrocene directly into an RF plasma discharge leads to electroactive ferrocene polymer deposition on glassy carbon and Pt surfaces. Surface waves corresponding to 3 x ten to the minus 8th power moles/sq cm ferrocene are obtained in this way. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A060 363 20/12 20/2

NAVAL RESEARCH LAB WASHINGTON D C

Electronic Materials Technology
(Semiconductors).

(U)

DESCRIPTIVE NOTE: Summary rept. 1 Jul 76-30 Apr 78,
AUG 78 66P Swiggard, Edward M.; Lessoff,Howard;
REPT. NO. NRL-MR-545
PROJ: F54581
TASK: ZF5458100;

UNCLASSIFIED REPORT

DESCRIPTORS: *Semiconductors, *Crystal growth,
*Epitaxial growth, Gallium arsenides, Indium
phosphides, Pyrolytic graphite, Boron nitrides,
Liquid crystals, Encapsulation, Purity,
Etching

IDENTIFIERS: MU52P0208, PE62762N

(U)
(U)

High purity GaAs has been compounded in
pyrolytic boron nitride (PBN) ware. Semi-
insulating GaAs single crystals have been grown
by the liquid encapsulation technique. High purity
InP has been compounded in PBN boats and single
crystals of InP have been grown by the high
pressure liquid encapsulation technique. Liquid
phase epitaxial layers of GaAs have been grown on
a semi-insulating substrate that has been etched with
an in-situ gallium etch prior to growth.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A060 127 7/2 7/4

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF
ELECTRONICSThe Adsorption of CO on Planar and Oxygen-
Etched Silicon Surfaces.

(U)

FEB 77 29P Dylla, H. Frederick; King,
John G.; Cardillo, Mark J.;
CONTRACT: DAAB07-74-C-0630, PHS-14322

UNCLASSIFIED REPORT

Availability: Pub. in Surface Science, v74 p141-
167 1978.SUPPLEMENTARY NOTE: Prepared in cooperation with Bell
Laboratories, Murray Hill, NJ.DESCRIPTORS: *Carbon monoxide, *Absorption spectra,
*Silicon, *Surface active substances, Electron
microscopy, Auger electron spectroscopy, Desorption,
Etching, Planar structures, Oxygen,
Reprints

(U)

Reprint: The Adsorption of CO on Planar and
Oxygen-Etched Silicon Surfaces.

AD-A060 363

UNCLASSIFIED

PAGE

19

AD-A060 127

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A057 197

11/1

ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DOVER NJ
LARGE CALIBER WEAPON SYSTEMS LABA Technique for Assessing the Durability of
Structural Adhesives.

(U)

DESCRIPTIVE NOTE: Technical rept.,
MAY 78 45P Wegman, Raymond F.; Ross,
Marie G.; Garnis, Elizabeth A.; Slota, Stanley
A.;

REPT. NO. ARLCD-TR-77010

MONITOR: GIDEP, SBIE E123-0228, AD-E400 171

UNCLASSIFIED REPORT

DESCRIPTORS: *Adhesives, *Adhesive bonding, *Test
methods, Endurance(General), Aluminum alloys,
Titanium, Titanium alloys, Phosphates,
Fluorides, Etching, Anodic coatings, Water,
Immersion

(U)

IDENTIFIERS: Aluminum alloy 2024-T3, Titanium
alloy 5A1 4V

(U)

IAC ACCESSION NUMBER: PL-029847
IAC DOCUMENT TYPE: PLASTIC -HARD COPY--

A new method for inexpensively evaluating the durability of a large number of adhesives was developed and evaluated. This test method enables an investigator to simultaneously evaluate many adhesive-adherend variations and to estimate the durability of the variations under conditions of load, temperature, and humidity. The method will save time and money in the screening process used to select the best adhesives and adherend surface treatments for a particular application. The method involves determining the residual strength after the bonded joints are immersed in 50 C water for prescribed periods of time. Data are presented for twelve structural adhesives which are 121 C (250 F) curing systems. The adherends used were 2024T3 aluminum, either acid-dichromate (FPL) etched or anodized, 6 Al-4V titanium and commercially pure (CP) titanium, both phosphate-fluoride etched. (Author)

(U)

IAC SUBJECT TERMS: P--(U)Anodized surfaces,
Durability, Structural adhesives, Test methods,
Residual strength, Temperature effects, Aluminum,
Titanium, Surface treatment, Adherends, Bonded

AD-A057 197

UNCLASSIFIED

PAGE

20

AD-A056 809

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A056 809 9/5 20/1

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Modal Analysis of SAW Convolver.

(U)

DESCRIPTIVE NOTE: Technical rept.,
JAN 78 40P Wang, Karl L. ;
REPT. NO. TR-526
CONTRACT: F19628-78-C-0002, ARPA Order-2929
MONITOR: ESD 78-3

UNCLASSIFIED REPORT

DESCRIPTORS: *Electroacoustic materials, *Surface
waves, *Acoustic waves, *Delay lines,
*Semiconductors, Silicon, Waveguides, Etching
IDENTIFIERS: *SAW convolvers, *Convolvers, Ion
beam etching, Air gaps, Acoustic waveguides,
Lithium niobates, Laser scanning,
PE62708F

(U)

(U)

The gap-coupled acoustoelectric convolver developed at Lincoln Laboratory is a surface-acoustic-wave (SAW) device consisting of a LiNbO3 delay line and a silicon strip supported on a series of spacer rails (or posts) which have been ion-beam etched into the LiNbO3 surface. The silicon/air-gap/LiNbO3 structure forms an over-mode acoustic waveguide. A theoretical model has been developed which analyzes the perturbing effect of rails and predicts the mode structure and beating phenomena between modes. The scattering by support posts is also analyzed. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A056 241 13/8 11/6

ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND DOVER NJ
LARGE CALIBER WEAPON SYSTEMS LABChromate-Free Method of Preparing Aluminum
Surfaces for Adhesive Bonding. An Etchant
Composition of Low Toxicity. (U)DESCRIPTIVE NOTE: Technical rept. Oct 76-30 Sep 77,
MAY 78 25P Russell, William J. ; Garnis,
Elizabeth A. ;

REPT. NO. ARLCD-TR-78001

MONITOR: GIDEP, SBIE E102-0129, AD-E400 160

UNCLASSIFIED REPORT

DESCRIPTORS: *Aluminum alloys, *Surface finishing,
*Adhesive bonding, Etching, Sulfuric acid, Iron
compounds, Sulfates, Nitric acid, Removal,
Chromates, Toxicity, Electrochemistry,
Strength (Mechanics) (U)IDENTIFIERS: Aluminum alloy 2024, Aluminum alloy
6061, Iron(III) sulfate, FPL etch (U)

IAC ACCESSION NUMBER: MCIC-104457 PL-029848

IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--

In a continuing effort to minimize the use of toxic and hazardous materials for the adhesive bonding of aluminum, a suitable alternative for the standard chromate-containing FPL etchant is being sought. This has resulted in the development of a chromate-free etchant of minimal toxicity (etchant P2) which consists of an aqueous solution of sulfuric acid and ferric sulfate. Surfaces produced with the new etchant composition when adhesively bonded result in joint strengths comparable to those obtained with the standard chromated etchant. Adhesively bonded 6061-T4 alloy specimens prepared with the new etchant exhibited stress durabilities superior to those prepared with the standard FPL etchant. No difficulties are expected to result from the use of the new etchant under production conditions. (Author) (U)

IAC SUBJECT TERMS: M--(U)Aluminum Alloys, 6061-T4,
2024-T3, Adhesive Bonding, Etchants, Toxicity,
Shear Test, Durability, Temperature Effect,
Humidity, Wedge Test, Adhesives, Surface
Layers, Finishing.; P--(U)Instrumentation,
AD-A056 241

UNCLASSIFIED

PAGE 21

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A055 071 11/9 11/5 7/3

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF MATERIALS
SCIENCE AND ENGINEERINGOxidative Stabilization of Acrylic Fibers.
I. Oxygen Uptake and General Model. (U)

DESCRIPTIVE NOTE: Technical rept.,

APR 78 35P Warner, S. B. ; Peebles, L.

H. , Jr.; Uhlmann, D. R. ;

REPT. NO. TR-10

CONTRACT: N00014-75-C-0542

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated 10 Jan 78,
AD-A048 746.

DESCRIPTORS: *Acrylic resins, *Fibers, *Oxidation
resistance, Carbon fibers, Graphite, Filaments,
Reaction kinetics, Polymerization, Nitriles,
Oxygen, Diffusion, Etching, Microstructure, X
rays (U)
IDENTIFIERS: WUNR356534 (U)

The mechanism of oxidative stabilization of acrylic fibers is characterized by two limiting cases which are determined by the fiber chemistry, the reaction conditions, and the diameter of the filament. These limiting cases correspond to diffusion-limited and reaction-limited kinetic processes. Although the chemistry of stabilization is too complex to specify, the various reactions are separated into two categories: those which occur prior to or concurrently with polymerization of the nitrile groups, called prefatory reactions; and those which occur subsequent to nitrile polymerization, called sequent reactions. Under conditions which allow the prefatory reactions to occur significantly before the sequent reactions, the diffusion of oxygen to reactive sites is limited by previously oxidized material; and the fiber shows a typical two-zone morphology. Under conditions where the prefatory and sequent reactions occur sequentially, the overall stabilization process is limited by the rate of the prefatory reactions; but a skin is established at the fiber surface which acts as an oxygen barrier. Data from a variety of sources, including oxygen analysis, microscopic examination, fiber residue after etching, tension developed in fibers held at constant length, (U)

AD-A055 071

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A054 670 20/5 20/12 13/8

RCA LABS PRINCETON N J

III-V Heterojunction Structures for Long-
Wavelength Injection Laser.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 5 (Interim), 16
Aug-15 Nov 77.

MAY 78 12P

;Enstrom, R. E. ;F. tenberg, M. ;
Nuese, C. J. ;Olson, G. H.

REPT. NO. PRRL-78-CR-22

CONTRACT: DAAB07-76-C-0872, ARPA Order-3137
MONITOR: ECOM 76-0872-5

UNCLASSIFIED REPORT

DESCRIPTORS: *Injection lasers, Heterojunctions,
Indium phosphides, Gallium arsenide lasers, Vapor
deposition, Epitaxial growth, Group III compounds,
Group V compounds, Near infrared radiation,
Etching

(U)

Several double heterostructure injection lasers
were fabricated from vapor-grown InGaAs P/
InP. Laser wavelength was 1.4 micrometer.

The lowest threshold current density observed was
2385 A/sq.cm. The etching characteristics of
bromine-methanol-phosphoric acid solutions on InP
were tabulated. (Author)

(U)

AD-A054 670

UNCLASSIFIED

PAGE

22

AD-A052 932

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A052 932 9/3 9/2

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Line-Profile Resist Development Simulation
Techniques,

(U)

77 5P

I. ;Neureuther, A. R. ;Van Duzer, T. ;
Jewett, R. E. ;Hagoue, P.

CONTRACT: F4620-71-C-0087, AFOSR-71-2113

PROJ: 2305

TASK: A9

MONITOR: AFOSR

TR-78-0653

UNCLASSIFIED REPORT

Availability: Pub. in Polymer Engineering and
Science, v17 n6 p38-384 Jun 77.

DESCRIPTORS: *Etching, *Lines (Geometry),
Simulation, Algorithms, Time studies,
Evolution (General), Two dimensional, Surface
properties, Optical processing, Printed circuits,
Microelectronics, Silicon dioxide, Ion
implantation, Reprints

(U)
(U)

IDENTIFIERS: WUAFOSR2305A9, PE51102F

The relative advantages and disadvantages of three
different algorithms are compared for simulating the
time evolution of two-dimensional line-edge profiles
produced by a locally rate dependent surface etching
phenomenon. Simulated profiles typical of optical
projection printing and electron-beam and X-ray
lithography of micron-sized lines in resist and
etching of ion-implanted SiO₂ are used as a basis
of comparison. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A051 568

7/4

RENSELAER POLYTECHNIC INST TROY N Y DEPT OF ELECTRICAL
AND SYSTEMS ENGINEERING

Vapor-Phase Etching and Polishing of GaAs
Using Arsenic Trichloride,

MAY 77 4P Bhat,Rajaram ;Ghandhi,Sorab

K. ;

CONTRACT: DAAG29-76-G-0127

MONITOR: ARD 13586.2-EL

(U)

UNCLASSIFIED REPORT

Availability: Pub. in Intl. of the

Electrochemical Society, v124 n9 1447-1448 Sep 77.

DESCRIPTORS: *Gallium arsenides, *Etching, *Vapor
phases, Polishing, Arsenic compounds, Chlorides,
Substrates, Hydrogen chloride, Doping,

Tellurium, Chromium, Reprints

(U)

The etching reaction of AsCl₃ with GaAs in
a hydrogen ambient at temperatures above 700 C has
been shown to be identical to that of HCl gas.
The ability to obtain equally good specular etched
surfaces for both Te- and Cr-doped GaAs
substrates makes AsCl₃ more attractive than HCl
gas in the choice of an etchant. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A050 677

9/1

20/3

MOTOROLA INC PHOENIX ARIZ SEMICONDUCTOR PRODUCTS DIV

Reliability Study of Doped Aluminum
Conductor Films.

(U)

DESCRIPTIVE NOTE: Final technical rept. May 76-Aug 77.

DEC 77 112P Black,James ;

CONTRACT: F30602-76-C-0300

PROJ: 2338

TASK: 01

MONITOR: RADC TR-77-410

UNCLASSIFIED REPORT

DESCRIPTORS: *Electric conductors, *Thin films,
*Metal films, Aluminum, Corrosion resistance,
Migration, Silicon, Reliability, Doping,
Etching, Current density, Glass, Alloys

(U)

IDENTIFIERS: Electromigration, Activation energy,
PE62702F, WURADC23380115

(U)

A reliability study of silicon doped aluminum
conductor films for semiconductor device use is
presented. The solid state dissolution process of
silicon in aluminum is discussed and the morphology
of etch pits that can form in silicon due to these
processes are described. Processes for depositing
Al/Si alloy films are briefly mentioned and the
structure of the films as deposited and after various
heat treatments is studied. The electromigration
failure mode of metal induced by high current
densities and temperatures is presented along with
the results of previous studies of pure aluminum,
other aluminum alloys and aluminum silicon alloys.
Current results on low temperature (< 210 C)
studies of small grained and glassed Al/Si alloys
indicate that they fail by an electrical open circuit
due to the growth of voids resulting from the
electromigration of Al in Al.

(U)

AD-A051 568

UNCLASSIFIED

PAGE

23

AD-A050 677

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A049 763 9/5 20/12 13/8

ICA SOLID STATE TECHNOLOGY CENTER SOMERVILLE N J

High-Reliability, Low-Cost Integrated Circuits. (U)

DESCRIPTIVE NOTE: Quarterly development rept. no. 7, 3
Aug-3 Nov 77.

NOV 77 35P

CONTRACT: N00039-76-C-0240

PROJ: F54586

TASK: XF54586002

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Complementary metal oxide semiconductors, *Sputtering, *Etching, *Wafers, High reliability, Low costs, Metallizing, Platinum, Passivity, Silicon nitrides, Copper, Chips(Electronics), Automation, Packaging

(U)

IDENTIFIERS: Sputter etching, Trimetalization, Tape automated assembly, Automated packaging, Metal tapes, PEG2762N

(U)

Wafer fabrication is nearly completed. COS/MOS circuits have been successfully fabricated utilizing sputter etch technology for platinum definition. Trimetalization technology with silicon nitride overcoat passivation, copper beam-tape automated assembly, and silicone molding compound has proven to be the best system for fabrication of high reliability low cost integrated circuits.

(U)

(Author)

AD-A049 763

UNCLASSIFIED

PAGE

24

AD-A049 204

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A049 204 20/2 20/3

INTERACTIVE RADIATION INC NORTHVALE NJ

High Performance Pyroelectric Materials. (U)

DESCRIPTIVE NOTE: Final rept. Feb 75-Jun 77,
JUN 77 86P Ruderman, Warren;
CONTRACT: DAAK02-75-C-0131

UNCLASSIFIED REPORT

DESCRIPTORS: *Single crystals, *Pyroelectricity, Crystal growth, Glycine, Sulfates, Fluorine compounds, Beryllium compounds, Alanines, Doping, Deuterium compounds, Production, Polishing, Etching, Dielectric properties, Constants, Coefficients

(U)

IDENTIFIERS: Triglycine fluoroberyllate, Triglycine sulfate

(U)

Single crystals of triglycine sulfate (TGS), triglycine fluoberyllate (TGFB), deuterated triglycine fluoberyllate (D-TGFB), triglycine selenate (TGSel), mixed crystals of TGS and TGSel and L-alanine doped TGS and TGFB were grown and characterized. Optimum crystal growth conditions were established. In particular, for D-TGFB which has the highest figure of merit, best crystal growth was obtained at a starting saturation temperature of 45 degrees, a seed rotation rate of 15 rpm, a pH of 3-6, a growth rate of 0.1 degrees per day for a volume of 10 liters, and a seed orientation in which the cleavage plane was parallel to the horizontal plane. Careful measurements were made of the pyroelectric coefficient and dielectric constant of a large number of samples of these homologs of TGS and consistent values were obtained. The superior figure of merit of D-TGFB was confirmed. The production of thin pyroelectric crystal targets by optical polishing and cup-etching was investigated. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A048 578 9/1 20/12 13/8

RAYTHEON CO WALTHAM MASS SPECIAL MICROWAVE DEVICES

Manufacturing Methods and Technology
Engineering High-Efficiency, High-Power
Gallium Arsenide Read-Type IMPATT Diodes.
Volume I.

(U)

DESCRIPTIVE NOTE: Final rept. 30 Jun 75-30 Jun 77,
AUG 77 187ⁿ Chalfour, H. R. ; Steele, S.

R. ;
REPT. NO. 0877-1393-VOL-1
CONTRACT: DAAB07-75-C-0045

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A048
579.

DESCRIPTORS: *IMPATT diodes, *Microwave equipment,
*Microwave oscillators, High power, Gallium
arsenides, Schottky barrier devices, Heat sinks,
Plating, X band, Ku band, Epitaxial growth,
Wafers, Metallizing, Etching, Precision
finishing

IDENTIFIERS: Read diodes, Lapping

(U)
(U)

A design review of Read profile IMPATT diodes
is presented. Work performed on this program to
achieve the target specifications for high power X-
band and Ku-band diodes is summarized. This
includes development of specifications, processes,
and characterization techniques for the Gallium
Arsenide epitaxial wafer, as well as assembly and
test procedures for the diode. Areas of
investigation included epitaxial wafer growth
processes, methods of controlling layer axial and
radial uniformity, and techniques for testing the
completed wafer. Schottky-barrier metallization and
dimensional control techniques during plating,
lapping and etching were the principal areas of
investigation in the dice processing area. Several
novel techniques were applied to the manufacturing
processes to improve the production rates of Read
IMPATT diodes. This included spray dicing of the
wafers, and new thermal resistance and noise
measuring techniques. Environmental test results
are summarized, including storage and operating life
test results during the program and on the final
production units. (Author)

(U)

AD-A048 578

UNCLASSIFIED

PAGE

25

AD-A048 077

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A048 077 11/2 20/2

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

Chemically Polished Quartz.

(U)

DESCRIPTIVE NOTE: Technical rept. Jan 76-Sep 77,
NOV 77 43P Vig, John R. ; LeBus, John
W. ; Filler, Raymond L. ;
REPT. NO. ECOM-4548
PROJ: 1L162705AH94

UNCLASSIFIED REPORT

DESCRIPTORS: *Quartz, *Surface finishing, *Etched
crystals, Ammonium Compounds, Fluorides, Surface
properties, Polishing, Polishes,
Solutions(Mixtures), Quartz resonators,
Degradation, Etching, Synthetic materials, Test
equipment, Quality control, Electron microscopes,
Microphotography
IDENTIFIERS: Ammonium bifluoride, ASH94,
PEG2705A

(U)

(U)

IAC ACCESSION NUMBER: MCIC-101753

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Etching in a saturated solution of ammonium
bifluoride is shown to be capable of producing
chemically polished AT-cut quartz surfaces over a
broad range of conditions. The quality of chemical
polish depends primarily on the surface finish prior
to etching, the depth of etch and the quality of
quartz used. The speed of polishing depends
primarily on the temperature of the etching bath.
In an 88 degree C etching bath, starting with 3
micrometers lapped blanks, chemically polished blanks
with a surface roughness of 0.1 micrometer and a
roughness angle of 1 degree can be produced in 15
minutes. Starting with a finer surface finish can
produce a smoother chemically polished surface.
Chemically polished blanks are shown to be
extremely strong. Fundamental mode 20 MHz
resonators made with chemically polished natural
quartz blanks showed no Q degradation with
increasing depth of etch.

(U)

IAC SUBJECT TERMS: M--(U)QUARTZ, CHEMICAL POLISHING,
ETCHING, ETCH PITTING, POLISHING, DISLOCATIONS,
SURFACE ROUGHNESS, SEM, CRYSTALLOGRAPHY, ETCHING,
TEMPERATURE EFFECT, AMMONIUM BIFLUORIDE SOLUTION.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A047 522 9/1 20/12 20/2

RCA LABS PRINCETON N J

Hyperabrupt Varactor Voltage-Controlled Oscillators.

DESCRIPTIVE NOTE: Final rept. 30 Jun 75-30 Nov 76, OCT 77 79P Mawhinney, D. D. ; Napoleon, J. J. ;

REPT. NO. 9RRL-77-R-45

CONTRACT: N00039-75-C-0474

UNCLASSIFIED REPORT

DESCRIPTORS: *Voltage controlled oscillators,

*Varactor diodes, *Microwave oscillators, Gallium arsenides, Wafers, Capacitance, Epitaxial growth, Vapor deposition, Doping, Etching, Ku band, X band, S band

IDENTIFIERS: Doping profiles, Hyperabrupt varactors

A method for fabricating and processing plated heat sink hyperabrupt gallium arsenide varactors for use in microwave voltage-controlled oscillators was developed and evaluated during this program. VCOs fabricated with these varactors demonstrated considerably improved linearity and reduced tuning voltage requirements as compared with VCOs fabricated with conventional abrupt junction varactors. During the program, hyperabrupt gallium arsenide varactor wafers were grown in which values of gamma from 0.5 to 2.0 were obtained and capacitance ratios as high as 30:1 were measured. In most cases, the carrier concentration profiles necessary to obtain the various hyperabrupt characteristics obtained were grown epitaxially by the hydride vapor synthesis technique using a programmed controller to introduce dopant at the required rates. The process was proven to have the capability to grow wafers which closely matched a desired profile. Because of the versatility of this controlled back-doping process, complicated structures can be grown such as the p(+)-n(o)-n(+)-n-p(+) GaAs wafers which were used to produce electrolytically etched varactor diodes with integral heat sinks.

(U)

AD-A047 522

UNCLASSIFIED

PAGE

26

AD-A047 108

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A047 108 9/1 20/12

WESTINGHOUSE RESEARCH AND DEVELOPMENT CENTER PITTSBURGH PA

Gallium Arsenide Vertical Channel Insulated Gate Field-Effect Transistor.

(U)

DESCRIPTIVE NOTE: Annual technical rept. Jan-Dec 76, FEB 77 67P Driver, M. C. ; Tremere, D.

A. ; Barrett, D. L. ;

REPT. NO. 77-9F7-VMIST-R1

CONTRACT: N00014-75-C-0418

PROJ: F54581

TASK: RF54581001

UNCLASSIFIED REPORT

DESCRIPTORS: *Field effect transistors, *Gallium arsenides, N type semiconductors, Channels, Gates(Circuits), Electrical insulation, Planar structures, Ion implantation, Fabrication, Vapor deposition, Epitaxial growth, Etching, Wafers

IDENTIFIERS: PE62762N, MUNR251019

(U)

(U)

The technologies necessary to fabricate a power, microwave frequency, vertical channel, gallium arsenide insulated gate field-effect transistor have been further developed. Planar devices that show FET action have been fabricated. The etching technology for a V-groove version of the vertical channel device has been explored. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A045 389

14/5

CALIFORNIA INST OF TECH PASADENA

Linearity and Enhanced Sensitivity of the
Shipley AZ-1350B Photorealist.

(U)

NOV 76 4P Livanos, A. G.; Katzir, A.;

Shellan, J. B.; Yariv, A.;

CONTRACT: AFOSR-76-2874

PROJ: 2305

TASK: C1

MONITOR: AFOSR

TR-77-1109

UNCLASSIFIED REPORT

Availability: Pub. in Applied Optics v16 n6
p1633-1635 Jun 77.DESCRIPTORS: *Photolithography, *Photographic
developers, Etching, High sensitivity, High
resolution, Gratings(Spectra), Reprints
IDENTIFIERS: PE61102F, WUAFOSR2305C1

(U)

(U)

The properties of the Shipley AZ-1350-B
positive photorealist used with the Shipley AZ-
303A developer were investigated. It was found
that the use of AZ-303A developer results in a
significant improvement of the sensitivity and the
linearity of the photorealist. The unexposed etch
rate of the photorealist was 35 A top- 5 A/sec.
Gratings of high efficiency have been successfully
fabricated using the above combination of photorealist
and developer. (Author)

(U)

AD-A045 389

UNCLASSIFIED

PAGE

27

AD-A045 362

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A045 362

14/5

ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN
MASSRadiography with the Fission Neutrons from
Californium-252.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 77 14P Antal, John J.; Becker,

Robert L.;

REPT. NO. AMMRC-TR-77-18

PROJ: 11161102AH42

UNCLASSIFIED REPORT

DESCRIPTORS: *Radiography, *Fast neutrons,
*Californium, Images, Nitrocellulose, Chemicals,
Etching

(U)

IDENTIFIERS: Californium-252, ASH42,

(U)

PE61102A

IAC ACCESSION NUMBER: NT-015241

IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

Fission neutron radiography, with images formed on
thin sheets of cellulose nitrate, has been
investigated using neutrons from Cf-252. A
polyethylene converter provides recoil protons from
neutron elastic scattering by hydrogen, which in turn
create damage in the cellulose nitrate. Chemical
etching then produces a frosted etch-track image
which can be reproduced photographically by either
scattered or transmitted light. The most readily
available cellulose nitrate sheets were found to
contain undesirable internal defects and thus films
are recast in thicknesses of several mils. The
images are of high resolution, as expected from a
computer calculation which considered the direction
and ranges of the recoil protons in polyethylene.
All materials, including those of low atomic
weight, may be radiographed with good penetration.
The technique is simple and employs inexpensive
materials. (Author)

(U)

IAC SUBJECT TERMS: N--(U)RADIOGRAPHY, NEUTRONS,
CALIFORNIUM, IMAGES, CHEMICALS, ETCHING, COST
EFFECTIVENESS, RESOLUTION, PENETRATION, TECHNIQUE, TEST
METHODS:

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A045 089 9/5 13/8

RCA SOLID STATE TECHNOLOGY CENTER SOMERVILLE N J

High-Reliability, Low-Cost Integrated Circuits.

(U)

DESCRIPTIVE NOTE: Quarterly development rept. no. 6, 3
May-3 Aug 77. 25P

AUG 77

CONTRACT: N00039-77-C-024C

PROJ: F54586

TASK: XF54586002

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Fabrication, Wafers, Titanium, Complementary metal oxide semiconductors, Silicon nitrides, Platinum, Gold, Sputtering, Etching, Masks, Reliability(Electronics), Low costs, Salt spray tests, Environmental tests, Packaging, Plastics, Ceramic materials

IDENTIFIERS: PE62762N

(U)
(U)

IAC ACCESSION NUMBER: PL-027679

IAC DOCUMENT TYPE: PLASTIC -MICROFICHE--
Water fabrication is proceeding as scheduled. The technology development for platinum sputter etching using gold as the etch mask has progressed sufficiently to allow conversion of the COS/MOS circuits to sputter etching. Reliability data to date obtained on CA741 devices shows a 0.0044% per 1000 hours failure rate at 120 C at the 60-percent confidence level. Copper migration in epoxy packages at 125 C has not been observed as a failure mode. Salt atmosphere resistance tests to date have produced excellent results. All required life-test sockets for Phase II and some of the sockets for Phase III of the program have been ordered.

(U)

IAC SUBJECT TERMS: P--(U)Printed circuits, Reliability, Encapsulation, Failure modes, Epoxy, Packaging, Passivation, Semiconductors, Silicon nitride, Gold, Ceramics, Copper, Migration, Electronic applications, Salt spray tests, ZZ Unlimited.

AD-A045 089

UNCLASSIFIED

PAGE

28

AD-A044 951

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A044 951 19/1 19/4 11/6

MATERIALS RESEARCH LABS MARIBYRNONG (AUSTRALIA)

Gas Washing of Fracture Surfaces by Explosive Detonation Products.

(U)

MAR 77 15P Bedford, A. J. ;
REPT. NO. MRL-R-681

UNCLASSIFIED REPORT

DESCRIPTORS: *Fragments, *Surface properties, *Explosive gases, *Steel, Fragmentation warheads, Detonations, High explosives, Fracture(Mechanics), Etching, Martensite, Porosity, Layers, Melting, Masking, Explosion effects, Electron microscopy, Cross sections, Australia

IDENTIFIERS: Scanning electron microscopy, Composition B explosive

(U)

(U)

Experiments have been carried out to study the nature of features produced on fracture surfaces after washing with the gaseous products of detonation of a high explosive. White-etching, essentially untempered martensite layers are produced. A porous outer layer indicative of melting may form, masking features of the original fracture surface. It is concluded that most fragments from a detonated body are ejected before these effects can occur.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A043 668 9/5 13/8

STATE UNIV OF NEW YORK AT STONY BROOK DEPT OF PHYSICS

Preparation of Variable Thickness
Microbridges Using Electron Beam
Lithography and Ion Etching.

(U)

DESCRIPTIVE NOTE: Technical rept. 31 Jul-31 Nov 76,

JUN 77 9p Sandell, R. D.; Dolan, G.

J. Lukens, J. E.;

CONTRACT: N00014-75-C-0769

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the International
Conference on Superconducting Quantum Devices, Oct
76, Berlin (Germany).

DESCRIPTORS: *Electron beams, *Ion beams,
*Microcircuits, Printed circuits, Circuit
interconnections, Bridges, Etching, Thickness,
Indium, Films, Superconductivity, Electric
contacts, Reprints

(U)

IDENTIFIERS: *Electron beam lithography,

(U)

*Microbridges. LPH-NR-319-062

Techniques have been developed for the fabrication
of variable thickness constriction (VTC)
microbridges. The bridges produced by these
techniques display the superior characteristics found
by others in VTC bridges made by sputtering
techniques. The EBL techniques described have the
advantage of being easily applicable to fabrication
of large arrays of nearly identical bridges.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A042 019 14/5 20/8

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Modeling Validation, Techniques and
Applications for X-Ray Lithography.

(U)

DESCRIPTIVE NOTE: Interim rept.,

76 9p Hagouel, P. I.; Neureuther,

A. R.;

CONTRACT: F44620-76-C-0100

PROJ: 2305

TASK: A9

MONITOR: AFOSR TR-77-0252

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Electron and Ion
Beam Science and Technology International
Conference (7th), 1976.

DESCRIPTORS: *Lithography, *X rays, *Diffraction
gratings, Masks, Gold, Etching, Wafers,
Interferometry, Fabrication, Silicon, Boron

(U)

(U)

IDENTIFIERS: WUAFOSR2305A9, PE61102F

The experimental development of soft X-ray
lithography in conjunction with fabrication of blazed
diffraction gratings is discussed.

Interferometrically produced gold masks on thin
silicon windows and a technique for protecting the
mask during etching of the window are described.
Images resulting from a multiple source angle
exposure technique are shown in support of this
technique as a workable concept. Prints of Ni
grids and sub-micron period Au gratings on thin
silicon windows are also shown. The constructive
use of thermal effects during both exposure and
development are also considered. (Author)

(U)

AD-A043 668

UNCLASSIFIED

PAGE

30

AD-A042 019

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A044 282 11/9 13/8 9/5

NAVAL WEAPONS CENTER CHINA LAKE CALIF

Electron Resists.

(U)

DESCRIPTIVE NOTE: Final rept. Jan 76-Jan 77,
APR 77 29P Ordung, P. F.; Applebaum, J.

: Blazek, H. F.;

REPT. NO. NWC-TP-5929

MONITOR: GIDEP E085-1600

UNCLASSIFIED REPORT

DESCRIPTORS: *Polymeric films, *Masks, *Integrated circuits, *Silicon, *Etching, *Electron beams, Microelectronics, Lithography, Fabrication, Polymers, Copolymers, Polymethyl methacrylate
IDENTIFIERS: Electron resists, Photoresists

(U)
(U)

This report is a survey of the work on electron-beam resist materials as reported in the open literature. The period surveyed does not go beyond 1 January 1977. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A043 727 9/1 13/8

LASER DIODE LABS INC METUCHEN N J

Light Emitting Diodes for Fiber Optic Communications.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 2, 1 Jan-31 Mar 77,

JUN 77 39P Gennaro, Albert;
CONTRACT: DAAB07-76-C-8135

UNCLASSIFIED REPORT

DESCRIPTORS: *Light emitting diodes, *Epitaxial growth, *Etching, Fiber optics, Optical communications, High velocity, *Wafers, Industrial production, Gallium arsenides, Aluminum arsenides, Heterojunctions, Liquid phases, Chips (Electronics), Packaging, Test methods, Test equipment, Life tests
IDENTIFIERS: LPN-DA-2769778

(U)
(U)

The design and fabrication of high speed etched-well light emitting diodes for fiber optic communications is discussed with regard to materials synthesis via LPE, wafer fabrication, and device assembly in a manufacturing environment. (Author)

(U)

AD-A044 282

UNCLASSIFIED

PAGE

29

AD-A043 727

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD-A041 620

13/8

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Ion Beam Etching.

(U)

DESCRIPTIVE NOTE: Journal article,
76 12P Smith, Henry I. ;
REPT. NO. MS-4169
CONTRACT: F19628-76-C-0002
PROJ: 7X263304021C
MONITOR: ESD TR-76-38E

UNCLASSIFIED REPORT

Availability: Pub. in Etching for Pattern
Definition, p133-143 1976.
DESCRIPTORS: *Etching, Ion beams, Fabrication,
Current density, Reprints
IDENTIFIERS: *Ion beam etching, Surface relief
structures, AS215, PE63304A

The application of ion beam etching to the
fabrication of surface relief structures will be
reviewed. For maximum energy efficiency a
bombarding energy near 500 eV is optimum. Above
this energy the sputtering yield curve increases
slower than linear. Low energy is also preferred to
minimize surface damage (of the order of 20 A
depth at 500 eV). Kaufman type ion sources,
originally developed for ion engine applications,
have proven to be most suitable for low energy
etching of high resolution relief structures in
substrates several cm in diameter and for varying the
depth of etching as a function of position. Current
densities up to 2 ma/sq cm have been achieved. By
proper choice of the diameters and spacings of the
screen and accelerator grid apertures, one can
optimize beam collimation (<5 deg), and/or
minimize forward sputtering of the grids.
(Author)

(U)

AD-A041 620

UNCLASSIFIED

PAGE

31

AD-A040 230

UNCLASSIFIED

ZOMOS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD-A040 230

9/5

13/8

20/4

HARRY DIAMOND LABS ADELPHI MD

A Study of Fineblanking for the Manufacture
of Fluoric Laminar Proportional
Amplifiers.

(U)

DESCRIPTIVE NOTE: Technical memo.,
MAY 77 19P Phillippi, R. Michael ;
REPT. NO. MDL-TM-77-8
PROJ: 11161102AH44

UNCLASSIFIED REPORT

DESCRIPTORS: *Fluoric Devices, *Fluid amplifiers,
Manufacturing, Fabrication, Metals, Etching,
Metalworking (U)
IDENTIFIERS: *Fineblanking, *Laminar proportional
amplifiers, Metal etching, ASH41,
PE61102A (U)

A nonconventional stamping process, known as
fineblanking, is investigated for use in high-volume
production of fluoric laminar proportional
amplifiers. The investigation includes the
standard deviation of critical dimensions, supply and
control flow measurements for a constant pressure,
amplifier gain, common-mode rejection ratio (CMRR),
and cost breakdown. The present study indicates
that fineblanking yields a significant improvement
over metal photochemical etching (a widely used
fabrication technique) in the repeatability of
geometric parameters. Typical standard deviations
of a nozzle width are less than 0.5 percent.
Further, a 61.3-percent improvement of the mean
CMRR was observed. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A39 647 11/6 11/2

ARMY INST OF DENTAL RESEARCH WASHINGTON D C

High Temperature Microscopy of Porcelain-Precious Alloys.

(U)

APR 77 13P Huget, Eugene F. ; De Simon, Laszlo B. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Precious metals, *Dental prostheses, *Microstructure, *High temperature, Microscopy, Porcelain enamels, Gold alloys, Palladium alloys, Silver alloys, Metastable alloys, Quenching, Heat treatment, Etching, Fusion (Melting), Castings, Disks, Grain boundaries

(U)

This study traced changes in the microstructures of five alloys over the range of temperatures employed in the application of dental porcelain. Specimens were 1/16 x 1/4-inch cast discs. A microscope that provided hot-stage and vacuum capabilities was used to monitor microstructures of the alloys between 800 F and 1,950 F. Heating rate of the cast pieces was 100 F per minute. Visualization of grain boundaries was made possible by selective thermal etching. Two alloys showed crystallographically dependent striated contours at temperatures in excess of 1,700 F. These markings appeared to result from nonuniform expansion of neighboring grains and slip. At 1,950 F., all alloys showed pronounced grain distortion and incipient melting. Changes in surface architecture of the test alloys that occur at high temperatures may enhance the micromechanical interlocking of a fused veneer. However, such changes would appear to be detrimental to the fit of precision cast restorations. (Author)

(U)

AD-A039 647

UNCLASSIFIED

PAGE

32

AD-A038 996

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 996 20/12

AEROSPACE CORP EL SEGUNDO CALIF IVAN A GETTING LABS

Metal-Insulator-Semiconductor Studies of Lead Telluride.

(U)

DESCRIPTIVE NOTE: Interim rept.,

APR 77 23P Lilly, David A. ; Joslin,

David E. ; Kan, H. K. Alan ;

REPT. NO. TR-0077(2270-20)-1

CONTRACT: F04701-76-C-0077

MONITOR: SAMSO.GIDEP TR-77-72.E081-0133

UNCLASSIFIED REPORT

DESCRIPTORS: *Lead compounds, *Tellurides, *Semiconductors, Zirconium oxides, Capacitors, Thin films, Surfaces, Charge coupled devices, Frequency response, Substrates, Etching

IDENTIFIERS: *Metal insulator semiconductors

(U)

(U)

The capacitance and conductance-voltage characteristics were measured on metal-insulator-semiconductor capacitors fabricated with zirconium dioxide films on single-crystal lead telluride. At 77 K, on both n- and p-type substrates, evidence of surface potential control was obtained. Comparison of the measured capacitance-voltage characteristics with those calculated from the equilibrium solution of the one-dimensional Poisson equation indicates qualitative agreement, although the slope (dC/dV) of the measured capacitance in the region near the capacitance minimum is less steep than calculated. The high-frequency response of the capacitance and position of the capacitance minimum were used to deduce the presence of an inversion layer on some n-type substrates of charge density approximately 5.0 times 10 to the 13th power per sq cm2. This layer was found to be dependent on surface preparation treatment prior to insulator deposition. Results of surface chemical studies indicate that inversion may be due to oxide formation during chemical etching. Conductance data obtained confirm the existence of a large interfacial state density.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A038 674 21/5 11/6

AIRESEARCH MFG CO OF ARIZONA PHOENIX

Integral, Low-Cost, High-Temperature
Turbine Feasibility Demonstrator (Small
Laminated Axial Turbine Program).

(U)

DESCRIPTIVE NOTE: Final rept. Mar 74-Sep 76.
FEB 77 192P Furst, D. G. ; Vershure, R.

W. ; Pyne, J. A. ; Clark, J. J. ;

REPT. NO. 74-210841 (29)

CONTRACT: F33615-74-C-2034

PROJ: 3066

MONITOR: AFAPL TR-77-2

UNCLASSIFIED REPORT

DESCRIPTORS: *Axial flow turbines, *Turbine wheels,
Laminates, Turbofan engines, Low costs, High
temperature, Etching, Photomasking, Feasibility
studies, Computer graphics, Computer aided design,
Diffusion bonding, Nickel alloys
IDENTIFIERS: Nickel alloy waspaloy,
PE62203F

(U)

(U)

IAC ACCESSION NUMBER: MCIC-099582

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The Integral Low-Cost, High-Temperature
Turbine Feasibility Demonstrator Program was
conducted to establish the feasibility of
constructing a small, integral, cooled turbine using
photoetched laminates bonded together to form a
complete wheel. A turbine design was established
utilizing a cooling scheme compatible with operation
at 2600 F. Methods were established for making
the laminate photoetch tooling with the use of
computer graphic design techniques. Photoetching
and bonding parameters were optimized through the use
of small bonded stacks. The photoetch and bonding
methods were further optimized by bonding full-size
wheel blanks, and the successful construction of a
complete integral, cooled, laminated turbine. The
wheel integrity was established by subjecting it to a
115-percent design speed spinpit test. It is
recommended that this method of turbine construction
be further developed because of the great potential
for both cost-reduction and achieving high operating
temperature capability through this approach.
(Author)

(U)

AD-A038 674

UNCLASSIFIED

PAGE

33

AD-A038 266

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A036 266 9/5 20/4

VON KARMAN INST FOR FLUID DYNAMICS RHODE-SAINT-GENESE
(BELGIUM)

Study of the Switching Mechanism in Bistable
Amplifiers with Application to Their
Development, Optimization and
Construction.

(U)

DESCRIPTIVE NOTE: Final technical rept. Nov 75-Nov 76.
NOV 76 173P Carbonaro, M. ;

CONTRACT: DA-ERD-75-G-073

PROJ: 1T161102B35E

TASK: 00

UNCLASSIFIED REPORT

DESCRIPTORS: *Bistable devices, *Fluidic amplifiers,
Flow fields, Turbulent flow, Laminar flow,
Mathematical models, Fabrication, Etching,
Chemical milling
IDENTIFIERS: *Bistable amplifiers, WU294,
A535E, PE61102A

(U)

(U)

A detailed experimental and theoretical study of
the flow field in the interaction region of a fluidic
wall-attachment amplifier was made. Velocity
profiles were measured using a laser doppler
velocimeter. A mathematical model of the flow was
also established, using an integral method.
Reasonable agreement between theory and experiments
was obtained. As a continuation of previous work,
the design of two bistable amplifiers, operating
respectively with turbulent and with laminar flow,
was optimized. A simplified chemical etching
technique was established for the manufacture of such
fluidic elements. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A034 863 22/2 20/13 20/6

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

Second Surface Thermal Control Mirrors for
Reflection Control. Volume I.

(U)

DESCRIPTIVE NOTE: Final technical rept. Mar 74-Mar 75,
JAN 77 67P Neu.J. T. ;Dorian,M. F.

CONTRACT: F04701-C-C-0316

PROJ: 2132

MONITOR: SAMSO TR-76-92-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A034

864.

DESCRIPTORS: *Temperature control, *Spacecraft,
*Reflectivity, Surface properties, Specular
reflection, Solar radiation, Etching, Hydrogen
fluoride, Tetrafluoroethylene resins, Far infrared
radiation, Diffuse reflection,
IDENTIFIERS: Fused silica, Second surface mirrors,
Infrared mirrors, PE63438F

(U)

(U)

This final report documents the results of a
theoretical and experimental program to investigate
ways to make second surface mirrors (e.g., thermal
control surfaces, composed of thin transparent
materials such as fused silica and FEP Teflon
with a reflective backing, which are used on space
vehicles) which are diffusely reflective but which
retain the high solar reflectance of commercial
specularly reflecting second surface mirrors. A
number of designs were surveyed and four designs were
fully evaluated. Three of these designs employed
fused silica substrates with front or front and back
surfaces ground with grinding compounds and then
etched in a hydrogen fluoride solution. When
suitably silvered on the back sides, these specimens
met design goals. One of these designs employed a
FEP Teflon substrate with front and back surfaces
contoured by compression of Teflon sheet between
quartz plates in a vacuum oven. When silvered on
the back side, good diffuseness was obtained but
solar reflectance was slightly degraded over the
reflectance of commercial Teflon second surface
mirrors. (Author)

(U)

AD-A034 863

UNCLASSIFIED

PAGE

34

AD-A033 803

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A033 803 20/5

MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF
ELECTRONICS

Thin-Film Dye Laser with Etched Cavity,

(U)

JUL 76 5P Hu,Chenming ;Kim,Seihee ;
CONTRACT: DAAB07-76-C-1400

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
v29 n9 p582-585 Nov 76.
DESCRIPTORS: *Dye lasers, *Thin films, *Laser
cavities, Etching, Polyurethane resins, Silicon,
Nitrogen lasers, Reprints

(U)

We describe a thin-film laser with a Fabry-
Perot cavity. The cavity is chemically etch into
a (100)-cut silicon substrate and filled with
rhodamine 6G doped polyurethane. Overfilling of
the cavity provides the passage for the output. A
nitrogen laser serves as pump source. (Author)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A032 954

11/6

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

Surface Characterization of Titanium and
Titanium Alloys. Part III. Effect on Ti
(c.p.) and Ti-8Mn of Laboratory Chemical
Treatments.

(U)

DESCRIPTIVE NOTE: Internal rept. Jul 75-Apr 76.

SEP 76 62p Baun, William L.; McDevitt,

Neil T.; Solomon, James S.;

REPT. NO. AFML-TR-76-29-Pt-3

PROJ: 7340

TASK: 02

MONITOR: GIDEP

E140-0572

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 2, AD-A027

134.

DESCRIPTORS: *Titanium alloys, *Surfaces, Etching,
Cleaning, Adhesive bonding, Titanium,
Phosphates, Chromates, Fluorides, Oxides,
Sodium compounds, Mass spectrometry, Morphology,
Electron microscopy, Chemical analysis,

Treatment

IDENTIFIERS: Titanium alloy 8 Mn, PE62102F,

WUAFML73400221

(U)

(U)

IAC ACCESSION NUMBER: MCIC-099219 PL-033308

IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--

This investigation is part three of a program which
looks at the effects of surface treatments on surface
chemistry and morphology of titanium and titanium
alloys. This part discusses the effects of six
laboratory surface treatments on titanium,
commercially pure, and Ti-8Mn alloys.

(Author)

(U)

IAC SUBJECT TERMS:

P--(U)Electron spectroscopy,
Auger spectroscopy, Surface treatment, Morphology,
Titanium, Alloys, Spectroscopy, Bonding,
Adhesion, Joints, Mass spectrometry, SEM, Zz

Unlimited.; M--(U)SURFACE STUDIES, UNALLOYED TITANIUM,
TITANIUM ALLOYS, TI-8MN, SURFACE TOPOGRAPHY, FINISHING,
SEM, AUGER ELECTRON SPECTROSCOPY, MASS SPECTROSCOPY,
SURFACE FINISH, CHEMICAL REACTIONS, ACETONE, SODIUM
HYDROXIDE, NITRIC ACID, HYDROFLUORIC ACID, SODIUM
ORTHOPHOSPHATE, SODIUM FLUORIDE, AMMONIUM BIFLUORIDE,

AD-A032 954

UNCLASSIFIED

PAGE

35

AD-A032 619

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A032 619

20/2

CLEMSON UNIV S C DEPT OF PHYSICS AND ASTRONOMY

The Growth and Characterization of Potassium
and Rubidium Azide Single Crystals.

(U)

MAY 75 5p Foster, D. L.; Wagner, K.

A.; Lasker, A. L.;

CONTRACT: DA-ARO-D-31-124-72-G120

MONITOR: ARO 9603.1-P

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Crystal Growth,
32 p33-36 1976.

DESCRIPTORS: *Crystal growth, *Potassium compounds,
*Rubidium compounds, *Azides, *Single crystals,
Reprints, Evaporation, Ionic current, Tracer
studies, Diffusion, Dislocations, Etching

(U)

Large single crystals have been grown of potassium
azide from the melt by the Kyropoulos technique and
rubidium azide from solution by evaporation. These
materials have been characterized by the direct
observation of dislocations by a new etching
technique and preliminary experiments of ionic
conductivity and tracer diffusion of Rb in
RbN3. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

-A031 719 9/5 9/3 20/1 20/12

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Techniques for Making Gap-Coupled
Acoustoelectric Devices. (U)

DESCRIPTIVE NOTE: Journal article,
SEP 75 4P Smith, Henry I. ;
REPT. NO. MS-4105
CONTRACT: F19628-73-C-0002
MONITOR: ESD TR-76-267

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Proceedings of Ultrasonic
Symposium (1975). IEEE Catalog No. 75, CHO
994-45U.

DESCRIPTORS: *Electroacoustics, *Semiconductor
devices, Assembly, Inspection, Amplifiers,
Silicon, Lithium alloys, Niobium alloys, Oxides,
Convolution, Ion beams, Etching, Memory devices,
Correlators, Lithography, Spacers, Fabrication,
Packaging, Dust control (U)
IDENTIFIERS: *Acoustoelectric devices, Gap-coupled
structures. (U)

The techniques recently developed for fabricating,
inspecting, assembling and packaging silicon-on-
LiNbO3 acoustoelectric devices, such as
amplifiers, convolvers and memory correlators, will
be presented. This will include: description of
the lithographic and ion beam etching techniques
employed in making the spacer posts, demonstration of
the techniques used for eliminating dust and
achieving uniform gaps, inspection methods, and
several examples of packages. Experience to date
indicates that the techniques for making gap-coupled
structures are reliable, and lend themselves to
widespread application. (Author) (U)

AD-A031 719

UNCLASSIFIED

PAGE

38

AD-A031 106

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A031 106 20/5 20/7

FRANKFORD ARSENAL PHILADELPHIA PA

Ion Beam Superpolishing of Metal Mirrors
for High Energy Lasers. (U)

DESCRIPTIVE NOTE: Final engineering rept.,
DEC 75 23P Lester, J. D. ; Gelles, M. ;
Cook, R. T. ;
REPT. NO. FA-TR-75090

UNCLASSIFIED REPORT

DESCRIPTORS: *Lasers, *Ion beams, *Mirrors, High
energy, Surface roughness, Metals, Patterns,
Etching, Polishes, Finishes, Sputtering,
Metallurgy (U)
IDENTIFIERS: *High energy lasers, Super
polishing (U)

A new process has been developed which employs a
low energy ion beam to superpolish metal surfaces.
The process is applicable in principle to all
metals. This technique overcomes the tendency of
metal surfaces to develop etch patterns and other
surface irregularities during ion beam bombardment.
The process produces superpolished optical surfaces
significantly superior to those formed by
conventional optical polishing or metallurgical
techniques. Because ions of inert gases are
employed for the superpolishing process the resultant
surface is uncontaminated in contrast to conventional
optical, chemical or metallurgical methods which
result in diffusion of abrasion contamination or
bronzed surfaces. In addition, this process may be
employed for final figuring of optical surfaces.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A030 777 11/2 20/2

ROCKWELL INTERNATIONAL ANAHEIM CALIF ELECTRONICS RESEARCH
DIV

Investigation of Defects and Impurities in
Silicon-on-Sapphire.

DESCRIPTIVE NOTE: Interim technical rept. 15 Jul 75-31 (U)

Jan 76,

JUL 76 52P Peel, John L.; Barry,

Michael D.;

REPT. NO. C76-142/501, Scientific-2

CONTRACT: F19628-75-C-0108

PROJ: AF-672A

MONITOR: RADC TR-76-208

UNCLASSIFIED REPORT

DESCRIPTORS: *Silicon, *Sapphire,

*Defects (Materials), *Impurities, Electrical
properties, Radiation tolerance, Complementary metal
oxide semiconductors, Ions, Mass spectrometers,
Substrates, Radiation hardening, Epitaxial growth,
Films, Leakage (Electrical), Etching, X rays,

Topography, Dislocations (U)

IDENTIFIERS: *SOS (Silicon on sapphire), (U)

*IMMA (Ion microprobe mass analyzer)

This report covers the second six months of a
program to investigate the effects of defects and
impurities in SOS materials on the electrical
characteristics and radiation tolerance of CMOS/
SOS devices. Additional chemical surface-etch
experiments and IMMA analyses were completed during
this phase of the program. This phase of the study
focused on fabricating CMOS/SOS devices on the
various substrate groupings examined in the first
phase of this study. Electrical parameter data and
radiation hardness data were obtained for the CMOS/
SOS devices and correlated with SOS material
characteristics. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A029 510 9/1 20/1

TEXAS INSTRUMENTS INC DALLAS CENTRAL RESEARCH LABS

Acoustic Ridge Waveguide Technology. (U)

DESCRIPTIVE NOTE: Final technical rept. 6 Jan 75-30
Jun 76,

AUG 76 94P Wagers, Robert S.;

REPT. NO. TI-08-76-41

CONTRACT: N00014-75-C-0317, ARPA Order-2827

UNCLASSIFIED REPORT

DESCRIPTORS: *Waveguides, *Acoustic equipment,
Acoustic waves, Surface waves, Ultrasonics,
Etching, Single crystals, Lithium compounds,

Niobates, Quartz, Transducers, Filters (U)

IDENTIFIERS: *Acoustic ridge waveguides (U)

The feasibility of etching single-crystal lithium
niobate and alpha-quartz to produce wedge-shaped
acoustic waveguides has been examined. The primary
etchant considered was boiling hydrofluoric acid.
Etch masks of sputtered chrome/gold were employed.
Highly uniform small (approximately 0.001 inch
high) waveguides could be produced in quartz
substrates. LiNbO3 waveguide fabrication was not
possible due to the high defect density in the
material. Spurious mode excitation problems were
examined and found to be minimal in unapodized
transducers on mechanically lapped waveguides with
large transverse dimensions. Smaller transverse
dimensions or apodization of the transducers
introduced interfering modes. Apodization of
interdigitated transducers on wedge waveguides was
evaluated as a means of achieving bandpass shaping.
The entire coupling range was found to be
controlled by the first wavelength of apodization.
Thus, impulse response weighting by apodization
will require control of electrode geometry to within
fractions of a wavelength from the apex of the
waveguide. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A029 196

11/6

PICATINNY ARSENAL DOVER N J

A Chromate-Free Process for Preparing
Aluminum Substrates for Adhesive Bonding --
A Preliminary Study.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUL 76 57P Russell, William J. ;

REPT. NO. DA-TR-4861

MONITOR: GIDEP, GIDEP E063-0094, 085.45.40.30-N5-

01

UNCLASSIFIED REPORT

DESCRIPTORS: *Aluminum alloys, *Etching, *Adhesive
bonding, Electron microscopy, Electrochemistry,
Surface finishing, Nitric acid, Sodium sulfates
IDENTIFIERS: Aluminum alloy 2024, Aluminum alloy
6061, Iron sulfates

(U)

(U)

IAC ACCESSION NUMBER: MCIC-097430 PL-024491

IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--

A new, non-chromated etchant for preparation of
aluminum surfaces for adhesive bonding has been
developed. The standard chromated sulfuric acid
(FPL) treatment of aluminum alloy surfaces for
adhesive bonding was studied using etching rate
determinations, electrochemical monitoring of the
reaction, surface resistance measurements, and
transmission electron microscopy. The results of
these studies were used to develop the new etchant.
Limited tests were conducted using a thermosetting
film adhesive to bond specimens prepared with a new,
non-chromated etchant on two different aluminum
alloys, 2024-T3 and 6061-T4. These were
subjected to hot water soak and stressed durability
testing. These preliminary tests indicate that the
new etchant composition resulted in joints with bond
strength and short term durability essentially equal
to those produced using the standard chromated
etchant. The new etchant consisted of an aqueous
solution of nitric acid, sodium sulfate, and ferric
sulfate.

(U)

IAC SUBJECT TERMS: M--(U)ADHESIVE BONDING, ETCHING,
ETCHANTS, TRANSMISSION MICROSCOPY, MICROSTRUCTURE, 6061-T4,
ALUMINUM ALLOYS, 2024-T3, 7075-T6, WEIGHT CHANGE, SURFACE
PROPERTIES, P--(U)Nitric acid-Surface treatment,

AD-A029 196

UNCLASSIFIED

PAGE

38

AD-A027 134

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A027 134

11/6

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

Surface Characterization of Titanium and
Titanium Alloys. Part II. Effect on Ti-
6Al-4V Alloy of Laboratory Chemical
Treatments.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 75-Feb 76,

MAY 76 57P Baun, William L. ;McDevitt,

Neil T. ;

REPT. NO. AFML-TR-76-29-pt-2

PROJ: AF-7340

TASK: 734002

MONITOR: GIDEP E146-1128

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part 1, AD-A025
334.

DESCRIPTORS: *Titanium alloys, *Surfaces,
Treatment, Etching, Cleaning, Phosphates,
Chromates, Fluorides, Sodium compounds, Oxides,
Mass spectrometry, Adhesive bonding, Morphology
IDENTIFIERS: Titanium alloy 6Al 4V

(U)

(U)

IAC ACCESSION NUMBER: MCIC-097432

IAC DOCUMENT TYPE: MCIC -HARD COPY--

This investigation is part two of a program which
looks at the effects of surface treatments on surface
chemistry and morphology of titanium and titanium
alloys. This part considers the effect of six
surface treatments on the alloy titanium-6 aluminum-4
vanadium. (Author)

(U)

IAC SUBJECT TERMS: M--(U)TI-6AL-4V, TITANIUM ALLOYS,
FINISHING, SURFACE PROPERTIES, DEGRESSING, CLEANING,
ETCHING, AUGER ELECTRON SPECTROSCOPY.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A026 852 6/5

ARMY INST OF DENTAL RESEARCH WASHINGTON D C

Enhancing Retention of Acid Etch Resin
Restorations in Primary Teeth.

(U)

MAY 76 16P Mueller,Brett ;Tinanoff,
Norman ;PROJ: DA-3-A-161102-B-71-R
TASK: 3-A-161102-B-71-R-04

UNCLASSIFIED REPORT

DESCRIPTORS: *Teeth, Dental enamel, Bonding,
Replacement, Acids, Etching, Electron
microscopy, Retention(General)
IDENTIFIERS: Cutting burs, Sandpaper disks, Tag
formation, Prismatic enamel, Primary teeth

The scanning electron microscope was used to
determine the usefulness of cutting burs, sandpaper
disks, and increased acid etch time on enhancing
retentive tag formation in primary teeth. Planning
the surface with a small round bur was found to be
the most beneficial procedure. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A026 428 20/6 13/8

CALIFORNIA UNIV BERKELEY

Profile and Groove-Depth Control in GaAs
Diffraction Gratings Fabricated by
Preferential Chemical Etching in H2SO4-
H2O2-H2O System,

(U)

SEP 75 4P Tsang,Won-Tien ;Wang,Shyh

CONTRACT: DAHC04-74-G-0070, NSF-ENG-74-03579
MONITOR: ARO 11833.18-EL

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
v28 n1 p44-46, 1 Jan 76.

DESCRIPTORS: *Diffraction gratings, *Gallium
arsenides, Chemicals, Etching, Substrates,
Fabrication, Reprints, Sulfuric acid,
Peroxides

IDENTIFIERS: *Chemical etching

(U)
(U)

The fabrication of diffraction gratings in GaAs
by preferential chemical etching is studied and it
demonstrated that different grating profiles can be
obtained by proper choice of substrate orientation
and direction of grating-mask groove openings or by
controlling the width of these groove openings and/or
etching time. Experimental curves relating the
etched groove depth to etching time for gratings with
different periodicities at different etchant
temperatures were obtained. In the experiments,
the H2SO4-H2O2-H2O system was used as the
preferential etchant together with Shipley AZ-
1350J as the resist. This combination enables the
use of the resist grating directly as a protective
mask during chemical etching.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A026 425 20/12 20/2

CALIFORNIA UNIV BERKELEY

Growth Characteristics of GaAs-Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels,

SEP 75 5P Botex,Nan ;Tsang,Won-Tien
Wang,Shyh ;
CONTRACT: N00014-75-C-0420, DAKC04-74-G-0070
MONITOR: ARD,AFOSR 11833.27-EL,TR-76-0971

(U)

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters, v28 n4 p234-237, 15 Feb 76.

DESCRIPTORS: *Semiconductors, *Epitaxial growth, *Optical waveguides, Liquid phases, Heterojunctions, Structures, Etching, Channels, Substrates, Reprints
IDENTIFIERS: Heterostructures, Aluminum arsenides, Liquid phase epitaxy

(U)

(U)

In this paper, we report our studies of the liquid-phase epitaxy of GaAs and Ga(1-x)Al(x)As single- and double-layered structures over preferentially etched channels in GaAs substrates. Results obtained indicate that various optical waveguide structures providing lateral optical confinement can be fabricated by this etch-and-fill technique. Further, it is found that the filling of the channels is dictated by surface tension of the melt rather than by preferential growth. This growth characteristic lessens the dependence of the final profile of the grown layer on the initial etched profile and makes the etch-and-fill technique particularly suitable for the fabrication of optical bends. (Author)

(U)

AD-A026 425

UNCLASSIFIED

PAGE

40

AD-A025 922

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A025 922 10/3

SPECTROLAB INC SYLMAR CALIF

Low Reflectivity Solar Cells.

(U)

DESCRIPTIVE NOTE: Final rept. 31 May 74-4 Jan 76,
JAN 76 83P Stella,Paul ;Avery,James ;

Scott-Monck,John ;

REPT. NO. 380-4686F

CONTRACT: F33615-74-C-2044

PRCJ: AF-3145

TASK: 314519

MONITOR: AFAPL TR-75-98

UNCLASSIFIED REPORT

DESCRIPTORS: *Solar cells, *Antireflection coatings, Reflectivity, Reflection, Reflectance, Etching, Silicon, Quartz, Sodium, Potassium compounds, Hydroxides
IDENTIFIERS: *Silicon solar cells, Solar energy conversion, Photovoltaic conversion

(U)

(U)

Techniques for both reducing and changing specular reflectance from silicon solar cell assemblies (cell and cover) were developed. Mechanical and chemical treatments of quartz cell covers yielded surfaces that acted like nearly perfect diffusers of incoming visible radiation. A four order of magnitude reduction in specular reflectivity was achieved in this manner. Selective etches and multiple antireflection (AR) coatings were used to reduce the total reflection from the cell. Etches such as sodium and potassium hydroxide reduced the total reflection over the entire silicon cell spectrum (350-1100 nm) to below one percent, with a corresponding increase in output current of nearly eight percent over conventionally prepared surfaces. Some degradation in fill factor was observed with the etched surface so that the current increase at the load voltage was somewhat less than at short circuit.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A025 507 9/5

STANFORD UNIV CALIF STANFORD ELECTRONICS LABS

Advanced Integrated-Circuit Technology for
Micropower ICs. (Integrated Circuits).

(U)

DESCRIPTIVE NOTE: Final rept. 5 Jun 72-4 Dec 74,
DEC 75 235P Rodgers, Thurman John ;
REPT. NO. SU-SEL-75-034
CONTRACT: DAAB07-72-C-0229
MONITOR: ECOM 72-0229F

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, Fabrication,
Bipolar transistors, Metal oxide semiconductors,
Deposition, Etching, Micropower circuits,
Silicon, Logic circuits

(U)

IDENTIFIERS: V-groove n-channel metal oxide silicon
logic

(U)

A four-mask epitaxial v-groove (EVG) bipolar IC
fabrication process uses a nonuniform N/(+)/i
layer and anisotropic etching of 1-0-0 silicon to
eliminate conventional buried layer and isolation
diffusions and to permit the use of an unmasked base
diffusion. A five-mask EVG process permits
fabrication of lateral pnp devices. The EVG
structure offers simpler processing, smaller
isolation capacitors, lower parasitic collector
resistances, and larger packing densities than
conventional processing. Reduced isolation
capacitance provides good micropower performance.
Process details are described. An epitaxial v-
groove n-channel MOS (VMOS) logic structure
suitable for 5-volt high-speed random logic was
fabricated.

(U)

AD-A025 507

UNCLASSIFIED

PAGE

41

AD-A024 730

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD-A024 730 6/5

WALTER REED ARMY MEDICAL CENTER WASHINGTON D C

Acid Etch Characteristics of Prismless
Enamel.

(U)

JUL 76 19P Tinanoff, Norman ; Mueller,
Bret ;
PRQJ: DA-3-A-161102-B-71-R
TASK: 3-A-161102-B-71-R-04

UNCLASSIFIED REPORT

DESCRIPTORS: *Teeth, *Dental enamel, *Dental
prostheses, Etching, Filling, Dental canies,
Crystal chemistry, Crystal structure, Epoxy
resins, Replacement, Orientation (Direction),
Hydrochloric acid, Electron microscopy, Scanning,
Prismatic bodies, Dissolving, Surface
properties

(U)

IDENTIFIERS: Prismless tooth enamel, Primary
teeth

(U)

Electron microscopy was used to describe acid etch
characteristics of prismless enamel. Large
variations in etching of surface enamel was seen and
this was considered to correspond to orientation of
the enamel crystallites in relation to the surface of
the enamel. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A022 970 20/12

TEXAS INSTRUMENTS INC DALLAS CENTRAL RESEARCH LABS

Semiconductor-Insulator Structures for the 1-
to 2-Micrometers Region. (U)DESCRIPTIVE NOTE: Interim technical rept.,
FEB 74 44P Bate, R. T.; Caywood, J.

M.; Hewes, C. R.; Lawley, K. L.; Reinberg,

A. R.;

REPT. NO. TI-08-74-09

CONTRACT: DAAK02-73-C-0093, ARPA Order-2182

UNCLASSIFIED REPORT

DESCRIPTORS: *Semiconductors, *Thin films,
*Insulation, Antireflection coatings, Diffusion,
Silicon, Surface properties, Masking,
Tunneling(Electronics), Etching, Indium
alloys, Gallium antimonides, Gallium arsenides
IDENTIFIERS: *Insulators, Passivation, *Metal
insulator semiconductors, Vapor phase epitaxy

(U)

(U)

The goal of this contract is to develop, fabricate,
evaluate, and deliver to NVL thin-film structures
consisting of semiconductors having bandgaps on the
order of 0.7 eV and compatible insulators. The
following requirements are also goals: High-
field tunneling transport, Semiconductor surface
passivation, Semiconductor masking for diffusion
and selective etching, Surface charge transport,
Antireflection coatings. Activities of the
program include semiconductor material preparation
(GaInAs), insulator preparation, and
characterization by both electrical and nonelectrical
techniques of semiconductor-insulator structures.
The primary semiconductor vehicles for this study
have been GaSb and GaInAs, but early work
was done on germanium; silicon was used as a control
substrate for insulator depositions throughout the
program. (U)

AD-A022 970

UNCLASSIFIED

PAGE

42

AD-A021 905

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A021 905 20/12 8/7

ROCKWELL INTERNATIONAL ANAHEIM CALIF ELECTRONICS RESEARCH
DIVInvestigation of Defects and Impurities in
Silicon-on-Sapphire. (U)

DESCRIPTIVE NOTE: Rept. for 15 Jan-15 Jul 75,

JUL 75 36P Peel, John L.; Barry,

Michael D.;

REPT. NO. C75-633/501, Scientific-1

CONTRACT: F19628-75-C-0108

PROJ: AF672A

TASK: 1

MONITOR: AFCL TR-75-0413

UNCLASSIFIED REPORT

DESCRIPTORS: *Sapphire, *Silicon, *Semiconductors,
Epitaxial growth, Substrates, Polishing,
Etching, Dislocations, Defects(Materials),
Concentration(Chemistry), Ions, Mass
spectrometers, Impurities
IDENTIFIERS: Silicon on sapphire, Selective
etching, Dislocation density, IMMA(Ion
Microprobe Mass Analyzer), Ion Microprobe
Mass Analyzer

(U)

(U)

This report covers the first six months work on a
program to investigate the effects of defects and
impurities in sapphire substrates and SOS material.
The work to date has been directed to identifying
the types and quantities of defects and impurities in
the samples of material provided by selected vendors.
Experiments utilizing chemical surface etch
techniques and x-ray topography were performed to
identify structural defects in the sapphire substrate
material. An Ion Microprobe Mass Analyzer
was used to make a detailed elemental analysis of the
SOS materials identifying the type and
concentrations of impurities present in various
samples. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A021 891 20/6 11/5 11/9 11/7

NAVAL RESEARCH LAB WASHINGTON D C

Replica Techniques for Transmission Electron Microscopy. (U)

DESCRIPTIVE NOTE: Interim rept.,
 FEB 76 29P McCoy, S. M.;
 REPT. NO. NRL-MR-3220
 PROJ: NRL-M01-08, R02-201
 TASK: WR02-201-001

UNCLASSIFIED REPORT

DESCRIPTORS: *Electron microscopy, *Electron transfer, *Electron microscopes, *Metallography, Replicas, Surface properties, Fracture(Mechanics), Cellulose acetates, Etching, Fragments, Decontamination, Thin film
 IDENTIFIERS: *Electron transmission, *Replica techniques, Substrate films, Polished surfaces, Dry stripping, TEM(Transmission electron microscope), Transmission electron microscope, Artifacts, Transparent replicas (U)

This report concentrates solely on the description of variations in replicating procedures for the transmission electron microscope. It includes techniques for cellulose acetate and direct carbon replication for rough and flat fracture surfaces, collision dry stripped replicas of polished and etched or flat fracture surfaces, preparation of substrate films on grids for particle examination, and variations in replica wash techniques (i.e., finishing; reflux unit; screen-bridge; and also wax techniques for replicas which tend to fragment badly). The appendix includes material on minimization of artifacts produced during replica preparation, salvage of scrolled replicas, edge retention during replication, and stereo effects. Throughout the text, variations in technique are discussed in order to guide the reader in the selection of an appropriate method to prepare replicas of a given structure. A variety of specialized procedures and detailed explanations are included as well as suggested replicating utensils for basic and specialized techniques. (Author) (U)

AD-A021 891

UNCLASSIFIED

PAGE

43

AD-A020 745

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A020 745 9/1 20/1

TEXAS INSTRUMENTS INC DALLAS CENTRAL RESEARCH LABS

Acoustic Ridge Waveguide Technology. (U)

DESCRIPTIVE NOTE: Semiannual technical rept. 30 Jun-31 Dec 75,
 JAN 76 36P Wagers, Robert S.;
 REPT. NO. TI-08-76-05
 CONTRACT: N00014-75-C-0317, ARPA Order-2827

UNCLASSIFIED REPORT

DESCRIPTORS: *Waveguides, *Acoustics, Signal processing, Acoustooptics, Substrates, Transducers, Etching, Microminiaturization, Interactions, Wafers, Crystal growth, Acoustic waves (U)

IDENTIFIERS: *Acoustic waveguides, Surface acoustic waves (U)

This report presents results obtained during the second six months of development of acoustic waveguides. A primary motivation for developing acoustic waveguides is to take advantage of the potential size reduction over current surface acoustic wave technology. Waveguide components represent the next step in microminiaturization of acoustic signal processing devices. Devices that may be developed include directional couplers, ring resonators, and serial memory. In addition, because of the high degree of spatial confinement of the acoustic energy, nonlinear and acousto-optic interactions become possible. The technical problems associated with this research are threefold: (1) development of suitable etching processes for waveguide formation, (2) development of fine geometry stencils for transducer fabrication, and (3) development of transducer weighting characteristics for bandpass shaping. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A020 670 19/1 9/5

HARRY DIAMOND LABS ADELPHI MD

Tantalum Nitride Thin-Film Radiometer for
Electronic Timer of XM732 Proximity
Fuze.

(U)

DESCRIPTIVE NOTE: Technical memo..

NOV 75 30P Kitchen, Lester A.; Bullis,

Lauren H.;

REPT. NO. HDL-TM-75-23

PROJ: HDL-7279;

UNCLASSIFIED REPORT

DESCRIPTORS: *Proximity fuzes, *Fuze functioning
elements, *Timing devices, Thin films, Deposition,
Nitrides, Electrical networks, Etching,
Photolithography, Tantalum, Chromium, Fixed
resistors, Variable resistors (U)
IDENTIFIERS: *Electronic timers, *XM-732 fuzes,
Radiometers, Tantalum nitride (U)

This report covers the performance evaluation of
commercially produced thin-film radiometers developed
for use in the electronic timer of the XM732
Proximity Fuze. The resistor network,
consisting of a 432-kilohm linear variable resistor
and a 3-kilohm fixed resistor, provides a means of
setting a delay time of 2 to 144 s before fuze turn
on. The radiometer elements were fabricated from
sputtered tantalum nitride (TaN) and vacuum-
evaporated chromium/gold (Cr/Au) or Cr
deposited on 99.5 percent alumina. The resistive
and conductor/commutator areas were defined by
photolithography and selectively etched in a batch
process. The TaN films exhibited excellent
properties, whereas the Au commutator pads tended
to smear under the pressure of the traversing spring
contact. Additional investigation found thick Cr
films to have the desired wear characteristics.
Improved process control successfully demonstrated
conformity as to resistor-tolerance, linearity,
mechanical, and environmental specifications. The
ability to meet these specifications qualified the
design and TaN/Cr materials combination for
inclusion in the Specification Control Drawing
for the Detonator Block Assembly.
(Author)

(U)

AD-A020 670

UNCLASSIFIED

PAGE

44

AD-A019 325

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A019 325 20/6 20/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

The Effects of Surface Structural
Properties on Laser-Induced Damage at 1.06
Micrometers.

(U)

DESCRIPTIVE NOTE: Final rept. 1973-1975,

DEC 75 156P House, Richard A., II;

REPT. NO. DS/PH/75-4

PROJ: AF-8809

TASK: 880916

MONITOR: AFWL TR-76-62

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Doctoral thesis.
DESCRIPTORS: *Infrared lasers, *Radiation effects,
*Surface properties, Silicon dioxide, Surface
finishing, Thin films, Ultrasonic cleaning,
Etching, Theses, Dielectrics (U)
IDENTIFIERS: Dielectric breakdown (U)

Short-pulse, laser-induced breakdown has been
correlated with several surface properties and
preparation techniques, for five transparent
dielectric materials: Fused Silica, BK-7,
ED-2, ED-4, and Cervit. The laser parameters
were: 1.06 micrometers wavelength, 40 ns pulse
width, TEM sub 00 mode, and 147 micrometer spot
size. Damage threshold correlated strongly with
RMS surface roughness, and measurements of
roughness can be used to predict the threshold.
Threshold was not affected by grinding procedure.
Surfaces overcoated with thin dielectric films had
reduced thresholds. Flame-polished and ion-
polished surfaces had greatly increased thresholds.
Surface contamination by rouge polishing compound
caused a drastic threshold reduction at a wavelength
of 1.06 micrometers. Nitric acid etching increased
damage threshold. Ultrasonic cleaning could
increase surface roughness and reduce threshold.
The technique of roughness-normalization
facilitates the comparison of various surface
preparation techniques.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A017 689 13/8 14/2

NORTHROP CORP HAWTHORNE CALIF AIRCRAFT DIV

Anodic Etching - A Method of Detecting Grinding Burns on Chromium Plated Steel Parts.

(U)

FEB 75 39P Lauchner, E. A. ; Andrews, G.

REPT. NO. NOR-75-33

UNCLASSIFIED REPORT

DESCRIPTORS: *Nondestructive testing, *Etching, Anodic polarization, Chromium, Plating, Steel, High strength alloys, Inspection, Defects (Materials), Grinding IDENTIFIERS: Anodic etching

(U)

IAC ACCESSION NUMBER: NT-011588

IAC DOCUMENT TYPE: NTIAC -MICROFICHE--

Anodic etching, a method for detecting abusive grinding damage on chromium plated steel parts, is evaluated. Anodic etching procedure for inspecting chromium plated steel pins was studied and the mechanism of the anodic etch burn indication is discussed. In addition, the results of magnetic particle and penetrant inspection of the pins is presented. The results indicate that abusive grinding of chromium plate can cause cracks or burns in the plate or base metal that are not detected by conventional inspection techniques. Anodic etching is a useful technique for determining if chromium plate has been burned by abusive grinding. If the plate is burned, further investigation is required to determine whether the base metal is burned or cracked.

(U)

IAC SUBJECT TERMS: N--(U)*ETCHING, *STEEL, *DAMAGE, *GRINDING, CHROMIUM, PLATING, MAGNETIC PARTICLE INSPECTION, PENETRANTS;

AD-A017 689

UNCLASSIFIED

PAGE

45

AD-A017 356

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A017 356 9/1 20/6

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Surface-wave Resonators Using Grooved Reflectors.

(U)

DESCRIPTIVE NOTE: Journal article,

MAY 75 11P Li, Robert C. ; Alusow, John A. ; Williamson, Richard C. ;

REPT. NO. MS-3979

CONTRACT: F19628-73-C-0002

PROJ: AF-649L

MONITOR: ESD TR-75-288

UNCLASSIFIED REPORT

Availability: Pub. in Annual Symposium on Frequency Control (29th), p167-176 1975.

DESCRIPTORS: *Cavity resonators, *Reflectors, Etching, Grooving, Single crystals, Etched crystals, Quartz resonators, Very high frequency, Reprints

(U)

IDENTIFIERS: Lithium niobate, Fabry-perot resonators, Periodic structures, Grooved reflectors

(U)

The resonator described in this paper consists of a pair of reflectors, each made up of a periodic array of weakly-reflecting (shallow) grooves etched into the crystal surface, and separated by an appropriate gap on the free surface of a crystal. The theory of shallow-groove arrays, with emphasis on their stop-band behavior, is reviewed. This is then applied to an analysis of the modes of the resonator, and the relationship of resonator Q to the array parameters, such as the number and depth of grooves, etc. Theoretical limits on achievable Q, imposed by propagation and diffraction losses, are presented for the two commonly used substrates of LinbO3 and Si-cut quartz. Experimental results are presented for devices at 68 MHz and 170 Mhz, with Q values ranging from several thousand to over ten thousand.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

J-A015 492 17/5 9/5

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Properties of Infrared Cat-Whisker near 10.6 Microns, (U)

FEB 75 5P Twu, Bor-long ; Schwarz, S.

E. ;

CONTRACT: DAH04-73-C-0026

MONITOR: ARO, AFOS: 8733.10-P, TR-75-1695

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters, v26 n12 p672-675, 15 Jun 75.

DESCRIPTORS: *Infrared detectors, *Dipole antennas, *Crystal video receivers, Far infrared radiation, Efficiency, Metal contacts, Tungsten, Carbon dioxide lasers, Diodes, Etching, Reprints

IDENTIFIERS: *Cat whisker receivers, *Infrared antennas (U)

IAC ACCESSION NUMBER: GC-752221

IAC DOCUMENT TYPE: GACIAC -HARD COPY--

Radiation patterns of 10.6 microns infrared antennas have been obtained experimentally and interpreted by means of a simple theory. It is found that the effective antenna is equal to the length of the etched portion of the sharpened cat-whisker antenna. This effective antenna length appears to be caused by decoupling of the electromagnetic field across a shape discontinuity of the antenna wire. The results suggest a simple means for defining the shape and size of infrared antenna structures. (Author) (U)

IAC SUBJECT TERMS: G--(U)RADIATION PATTERNS, INFRARED RADIATION, ANTENNAS, ANTENNA RADIATION PATTERNS, MICRONS 10-50, LENGTH, SHAPE, SIZE, DIODES, IMPEDANCE, WIRE, ETCHING:

AD-A015 492

UNCLASSIFIED

PAGE

46

AD-A014 053

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A014 053 11/2

ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTEVILLE VA

The Work of the State Institute of Glass in the Area of Glass Hardening. (U)

APR 75 6P Botvinkin, O. K. ; Denisenko, O. N. ;

REPT. NO. FSIC-HT-23-0628-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. of Vsesoyuznyi Nauchno-Issledovatel'skiy Institut Stekla. Trudy (USSR) n1 p107-109 1971.

DESCRIPTORS: *Glass, *Hardening, Heat treatment, Fused salts, Lithium compounds, Sodium, ion exchange, Silicones, Coatings, Etching, Translations, USSR (U)

An ion exchange method of hardening glass, by treating it in molten lithium salts, replacing the sodium ions by lithium, is described. Also mentioned are developed work on chemical hardening of glass in liquids, with subsequent application of organosilicon protective coatings, use of ultrasound in chemical hardening of glass, chemical hardening and subsequent production of double sheet glass, with recycling of the etching agent, search for polymer coatings and methods of application of them to sheet and packaging glass and special purpose glass. A method now in production of horizontal tempering of automobile glass is mentioned. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A013 949

7/4

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Auger Spectroscopy Studies of the Oxidation
of Amorphous and Crystalline Germanium.

(U)

DESCRIPTIVE NOTE: Journal article.

OCT 74 8P Henrich, Victor E. ; Fan,

John C. ;

REPT. NO. JA-4432

CONTRACT: F19628-73-C-0002

PROJ: AF-649L

MONITOR: ESD TR-75-198

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Applied Physics,

V46 n3 p1206-1213 Mar 75.

DESCRIPTORS: *Germanium, *Metal films, *Oxidation,

*Electron spectroscopy, Amorphous materials,

Polycrystalline, Single crystals, Sputtering,

Electron beams, Ion beams, Etching, Reprints

(U)

Auger-electron spectroscopy and ion-beam etching was used to study the room-temperature oxidation of sputtered and electron-beam-evaporated Ge films. Both amorphous and polycrystalline films were examined, as well as single-crystal Ge. Electron-escape-depth effects were removed by a deconvolution procedure in order to obtain the O distribution function. Large differences of O distribution were found between sputtered and e-beam amorphous films. Sputtered amorphous films oxidized in the same manner as single-crystal Ge, with the O confined to the first 5-10 A of the surface. In e-beam amorphous films, the depth of O penetration is more than 200 A, although the heavily oxidized region is still only 10-12 A thick. Polycrystalline films have heavily oxidized layers 6-9 A thick, with some O present to a depth of 100-200 A. (Author)

(U)

AD-A013 949

UNCLASSIFIED

PAGE

47

AD-A013 666

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 666

11/5

20/2

MASSACHUSETTS INST OF TECH CAMBRIDGE CENTER FOR MATERIALS
SCIENCE AND ENGINEERING

Heterogeneities in Carbon Fibers.

(U)

DESCRIPTIVE NOTE: Technical rept.,

AUG 75 15P Warner, S. B. ; Uhlmann, D.

R. ; Peebles, L. H. ; Jr;

REPT. NO. TR-7

CONTRACT: N00014-75-C-0542

PROJ: NR-053-534

UNCLASSIFIED REPORT

DESCRIPTORS: *Carbon fibers, *Acrylic resins, Etching, Ion bombardment, Microstructure, Orientation(Direction), Transverse, Stabilization, Crystal substructure, Precursors, Crystal defects, Pyrolysis, Electron microscopy, Spatial distribution, Acrylonitrile polymers, Heterogeneity, Synthetic fibers, Argon

(U)

Acrylic fibers, stabilized acrylic fibers and graphite fibers have been selectively etched by ion bombardment. After ion etching, the fibers are characterized by structures oriented transverse to the fiber axis with an average spacing ranging from 500-3000 A. These transverse structures are considered to be representative of structural inhomogeneities in the fibers, which are transmitted from the precursor fiber through the stabilization treatment to the final carbon fibers. The relation between these heterogeneities and the standard microstructural models of carbon fibers remains to be elucidated satisfactorily. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A013 153 20/6 20/12

CALIFORNIA UNIV BERKELEY

Optical Waveguides Fabricated by Preferential Etching.

(U)

DEC 74 8P Tsang, Mon-Tien ; Tseng,
Cheng-Chung ; Wang, Shyh ;
CONTRACT: DAHCO4-74-G-0070
MONITOR: ARO 11833.9-EL

UNCLASSIFIED REPORT

Availability: Pub. in Applied Optics, v14 n5
p1200-1206 May 75.

DESCRIPTORS: *Optical waveguides, *Etching,
*Grooving, *Filling, Organic coatings,
Deposition, Substrates, Silicon, Channels,
Reprints

(U)

IDENTIFIERS: *Organic fillers, Chemical waveguide
etching

(U)

We introduced a new technique of fabricating optical waveguides by first preferentially etching the waveguide grooves, which can be either cup-shaped or cup-shaped in cross section, and then filling the grooves with organic films by solution-deposition technique. With the chemical etching technique, perfectly smooth reflecting waveguide walls and well-defined waveguide profiles can be easily produced and reproduced with an accuracy that no other existing fabrication techniques can achieve. In our experiments, silicon was chosen as the base material for possible future integration of optical and electronic components. (Author)

(U)

AD-A013 153

UNCLASSIFIED

PAGE

48

AD-A009 776

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD-A009 776 9/1 13/8

MICROWAVE ASSOCIATES INC BURLINGTON MASS

Production Engineering Measure for Low Noise Solid-State Oscillator.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 5, 19 May 73-19
Aug 73.
OCT 73 38P Epstein, Howard ; Lee, Yongsik
; Ramachandran, T. B. ; Walline, Robert E. ;
CONTRACT: DAA805-72-C-5861
MONITOR: ECOM 5861-5-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly rept. no. 4,
AD-A009 775.

(U)

DESCRIPTORS: *Microwave oscillators, Production engineering, Ku band, IMPATT diodes, Gallium arsenides, Low noise, Superhigh frequency, Solid state electronics, Etching, Fabrication

(U)

IDENTIFIERS: *Production engineering measures

(U)

Technical problems arising in the application of the new mesa etching process for the IMPATT diodes are summarized. Although this process worked satisfactorily for large diameter mesas, it has proven completely unsuitable for the small mesas required by the devices for this program. Changes devised in this process are described. The new oscillator design initiated at the beginning of the quarter has been completed except for tuning varactor feedthrough details. Electrical data illustrating the improved performance of this design over past engineering samples is presented.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A008 199 20/6 20/5

PERKIN-ELMER CORP NORWALK CONN

Diffraction Grating Development.

(U)

DESCRIPTIVE NOTE: Final rept. 13 Jun 73-15 Jul 74.

JUL 74 172P Harris, J. S.; Siomba, A.

F.; Arnold, R.; Bantas, J.; Campe, G.;

REPT. NO. PE-11991

CONTRACT: F29601-73-A-004C

PROJ: AF-317J

TASK: AF-317J08

MONITOR: AFWL TR-74-218

UNCLASSIFIED REPORT

DESCRIPTORS: *Diffraction gratings, *Laser beams, *Infrared lasers, Coherent radiation, Sampling, Lasers, Fabrication, Optical equipment components, Alignment, Holography, Interferometry, Ion bombardment, Etching, Diffraction, Efficiency, Mirrors, Optical coatings

(U)

Grating samples for use as laser beam samplers were produced and tested for evaluation of various production methods and analytical solutions of grating diffraction. The grating samples were tested for scatter, absorbance, microscopic surface quality, sample wavefront quality, and variation of diffraction efficiency with polarization. Both ruling and ion etching were shown to produce good grating samples and used to produce gratings on large metal mirrors. Two large ruled gratings were experimentally evaluated as a series grating wavefront sampler. A series grating wavefront sampler was evaluated analytically for misalignment errors and high-power laser thermal effects.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A005 629 9/5

STANFORD UNIV CALIF INTEGRATED CIRCUITS LAB

Advanced Technology for Micropower Integrated Circuits.

(U)

DESCRIPTIVE NOTE: Annual rept. 30 Jun 72-29 Jun 73.

JAN 75 36P Meindl, J. D.; Rodgers, T.

J.;

CONTRACT: DAAB07-72-C-0229

PRCJ: DA-1-S-762705-AH-94

TASK: 1-S-762705-AH-9401

MONITOR: ECOM 72-0229-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Integrated circuits, *Fabrication, Masking, Transistors, Resistors, Schottky barrier devices, Silicon, Epitaxial growth, Etching

(U)

A new 'V-groove' process for the fabrication of bipolar integrated circuits was developed. The process requires carefully controlled deposition of epitaxial layers and anisotropic etching of silicon. The resulting structure eliminates the need for the conventional buried layer, isolation diffusion and masking for base diffusion. A four-mask process is used to make NPN transistors, resistors and Schottky diodes. A five-mask process can provide improved lateral PNP transistors. The second area of the activity was the development of vapor-phase arsenic doped polycrystalline silicon resistors of high value. These resistors result in reproducibly high resistance, low parasitic capacitance and elimination of the need for isolation.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A005 615

19/1

HARRY DIAMOND LABS WASHINGTON D C

Design and Fabrication of a Thin-Film
Ratiometer for Electronic Timer of XM732
Proximity Fuze. (U)

DESCRIPTIVE NOTE: Technical memo..

DEC 74 31P Kitchen, Lester A. ;Wood,

Gwendolyn B. ;Swirczynski, John P. ;Bullis,

Lauren H. ;Hebb, Emma Lee ;

REPT. NO. HDL-TM-74-24

MONITOR: GIDEP 661.45.51.30-N3-01

UNCLASSIFIED REPORT

DESCRIPTORS: *Proximity fuzes, *Measuring
instruments, Ratios, Timing devices, Electronic
equipment, Thin films, Vapor plating, Etching,
Resistors (U)

IDENTIFIERS: XM-732 fuzes, Ratiometers (U)

A feasibility study was conducted on the design and
fabrication of a thin-film precision ratiometer
developed for use in the electronic timer of the
XM732 Short Intrusion Proximity Fuze.
The ratiometer network consists of a 432-kohm
linear variable resistor and a 3-kohm fixed resistor
that provides a means of setting a delay time of 2 to
144 sec before fuze turnon. Nichrome and gold were
vacuum deposited onto a glazed ceramic substrate with
the resistor-conductor pattern being selectively
etched. This approach utilizes a step-like
conductor/commutator design that permits settability
within 0.5 sec through a movable spring contact.
Resistor tolerances of plus or minus 20 percent
with a linearity of plus or minus 1.5 ratio units
through an angle of 324 deg were demonstrated. (U)

AD-A005 615

UNCLASSIFIED

PAGE

50

AD-A005 095

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A005 095 13/8 20/6

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Grating Masks Suitable for Ion-Beam
Machining and Chemical Etching. (U)

JUL 74 5P Tsang,Won-Tien ;Wang,Shyh

CONTRACT: N00014-69-A-0200-1063, DAHC04-74-G-0070

MONITOR: ARD 11833.3-EL

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
v25 n7 p415-418, 1 Oct 74.

DESCRIPTORS: *Gratings(Spectra), *Masks, High
resolution, Substrates, Ion beams, Machining,
Chemical milling, Glass, Reprints (U)

By using the simultaneous exposure and development
technique, high-resolution relief gratings with
periods as small as 2400 Angstroms have been
produced which have grooves cleanly developed down to
the substrate surface and exposing wide surface
stripes with clearly defined, sharp and narrow
photoresist ridges. Such gratings are suitable for
use as masks in ion-beam machining and chemical
etching. Results of chemically etched gratings into
glass substrates with a 5000 Angstrom period are
presented and prospects of obtaining chemically
etched gratings with shorter periods are discussed.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A004 659 14/2 11/9

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF METALLURGY
AND MATERIALS SCIENCEIon Etching of Amorphous and Semicrystalline
Fibers. (U)

DESCRIPTIVE NOTE: Technical rept.,

FEB 75 25P Warner, S. B. ;Uhlmann, D.
R. ;Peebles, L. H. , Jr.;

REPT. NO. TR-4

CONTRACT: N00014-67-A-0204-0065

PROJ: NR-053-534

UNCLASSIFIED REPORT

DESCRIPTORS: *Ion bombardment, *Etching,
*Polymers, *Amorphous materials, *Fibers,
Surface properties, Microstructure, Electron
microscopy, Graphite, Carbon fibers,
Orientation(Direction)IDENTIFIERS: Transmission electron microscopy,
Scanning electron microscopy (U)

Ion etching of amorphous and semicrystalline polymeric or graphite fibers produces structures which can be observed in either the transmission electron microscope or the scanning electron microscope. The structures so produced have previously been identified as resulting from the etching process (artifacts) or as representing characteristics of the material, or both. The artifacts can be eliminated or minimized by rotating the sample during irradiation, using a low angle of incidence, and ensuring that the temperature of the sample surface remains low. When such precautions are used, amorphous fibers and semicrystalline fibers which are not oriented remain featureless after ion etching. Oriented semicrystalline fibers, however, develop a striated structure which is oriented perpendicular to the stretch direction. These transverse structural features reflect characteristic features of drawn fibers; but the relation between these features and the lamellar spacing is unclear. (U)

AD-A004 659

UNCLASSIFIED

PAGE

51

AD-A004 138

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A004 138 20/5 20/6

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

Theoretical Study and Experimental
Development of Thin-Film Lasers and
Modulators for use in Integrated Optics. (U)

DESCRIPTIVE NOTE: Final rept.,

DEC 74 7P Wang, Shyh ;I
CONTRACT: AF-AFOSR-2114-71

PROJ: AF-9768

TASK: 976801

MONITOR: AFOSR TR-75-0081

UNCLASSIFIED REPORT

DESCRIPTORS: *Laser modulators, *Optical waveguides,
Thin films, Wave propagation, Etching,
Diffraction gratings (U)IDENTIFIERS: Integrated optics, *Optical
modulators (U)

Wave-optics analysis of thin-film modulators based on the principle of polarization conversion was completed and experimental demonstration of the principle was performed. Novel structures for Bragg lasers were proposed and analyzed. The feedback mechanisms were elucidated which made possible many possible structures for thin-film Bragg lasers. Experimental work on gratings and chemical etching showed excellent results. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A003 631 20/6 20/5 11/3

ROCKWELL INTERNATIONAL CORP ANAHEIM CALIF AUTONETICS
DIVInvestigation of Advanced Protective and
Antireflection Coatings for Halide
Optics.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jun 73-19 Apr 74.
JUN 74 18p Weigand, Bernard L. ;
REPT. NO. C73-892.4/201
CONTRACT: F19628-73-C-0275, ARPA Order-2415
MONITOR: AFRL TR-74-0551

UNCLASSIFIED REPORT

DESCRIPTORS: *Infrared windows, *Surface finishing,
*Antireflection coatings, Halides, Butadienes,
Polybutadiene, Etching, Hydrochloric acid,
Halogenated hydrocarbons, Acetic acid, Infrared
lasers, Thin films, Optical properties, Potassium
compounds, Chlorides, Ultraviolet radiation,
Sputtering, Glow discharges, Polymerization
IDENTIFIERS: Potassium chloride, Butadiene/
hexachloro

(U)

(U)

A chemical etch procedure using a solution of 91
parts of glacial acetic acid to 9 parts of
concentrated hydrochloric acid was developed for
polishing the potassium chloride. Thin film
polymeric coatings were prepared by radio frequency
glow discharge and ultraviolet techniques and proper
equipment has been assigned and assembled.
Hexachlorobutadiene - 1.3 was used as monomer for
preparation of polymeric coatings. Glow discharge
polymerization was occurring primarily in the vapor
phase rather than on the substrate surface thereby
establishing the proper mathematical relationship
between the monomer vapor pressure, flow rate,
substrate temperature, power, inert gas pressure,
flow substrate to-power source spacing and deposition
rate. The thin film polymeric coating showed a
slight absorption at 10.6 micrometers and little or
no absorption at 3 to 5 micrometers. The coating
demonstrated good adhesion to the substrate. The
very low coating deposition rates obtained by
ultraviolet photolytic polymerization of low pressure
materials make this process unattractive for this
type of materials.

(U)

AD-A003 631

UNCLASSIFIED

PAGE

52

AD-A000 502

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD-A000 502 13/8 9/1 20/6

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Ion-Beam Etching of Surface Gratings.

(U)

DESCRIPTIVE NOTE: Meeting speech,
NOV 73 8p Smith, Henry I. ; Melngailis,
John ; Williamson, Richard C. ; Brogan, William
T. ;

REPT. NO. MS-3649
CONTRACT: F19628-73-C-0002
PROJ: AF-649L
MONITOR: ESD TR-74-155

UNCLASSIFIED REPORT

Availability: Pub. in proceedings of the
Ultrasonics Symposium, p558-563 1973.
SUPPLEMENTARY NOTE: Sponsored in part by Office, Chief
of Research and Development (Army), Washington,
D.C.

(U)

(U)

(U)

(U)

(U)

(U)

DESCRIPTORS: *Gratings(Spectra), *Etching, Ion
beams, Ultrasonic radiation, Acoustic waves,
Surface waves, Sputtering, Lithium compounds,
Niobates, Silicon, Gallium arsenides, Alumina
IDENTIFIERS: *Acoustic surface waves, Integrated
optics, Lithium niobates, Aluminum oxide

The phenomenon of sputtering at low energies (few
hundred eV) is reviewed as well as the rf and ion-
beam techniques which have been developed over the
last decade for sputter etching sub-micron resolution
structures. The technique of varying the depth of
a grating as a function of position by ion-beam
etching through a fixed aperture and moving the
substrate past this aperture at a variable rate is
described. Ion-beam etching causes facets to form
in the side walls of photoresist patterns, and as a
result the profiles etched into substrates are
rectangular only if etching is terminated before
facets intersect the substrate surface. Ion-beam
etching rates of several materials have been
measured. (Modified author abstract)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 919 567 9/1 20/6

PERKIN-ELMER CORP NORWALK CONN

Thin Film Optical Waveguide
Technology.

(U)

DESCRIPTIVE NOTE: Final rept. Apr 72-Oct 73,
MAR 74 56P Zernike, Frits ;
REPT. NO. PE-11934
CONTRACT: F33615-72-C-1585
PROJ: AF-2001
TASK: 200102
MONITOR: AFAL TR-74-60

UNCLASSIFIED REPORT

DESCRIPTORS: (*Waveguides, *Thin films),
Integrated systems, Optics, Lasers, Lenses,
Sputtering, Masking, Deposition, Passive
systems, Etching, Mixtures, Coupling circuits,
Three dimensional, Refractive index, Silicon
dioxide, Substrates, Thickness, Propagation,
Manganese, Glass, Helium, Cadmium, Gold,
Barium oxides
IDENTIFIERS: Photoresist, Fresnel lenses

(U)
(U)

Passive thin film waveguide components investigated under this contract were: 1) coupled waveguides, 2) waveguide lenses, 3) taper couplers, 4) waveguides with more or less rectangular cross sections. The coupling between waveguides was investigated in detail, both theoretically and experimentally. Methods for making 3-dB couplers and switches are described. Different experimental methods of making waveguide lenses were attempted; however, only two were found to be useful: one produces a lens with rectangular contours but thicker in the center and the other produces a round domed lens. Different tapers were investigated. It was found that a well-defined narrow output (input) angle can be obtained by using a very slow taper. Waveguides with trapezoidal cross sections were produced by sputter-etching of slab type waveguides using photoresist masks. The necessary patterns in these masks were made by exposing the photoresist pattern with a focused beam from a He-Cd laser operating at 4416A. (Author)

(U)

AD- 919 567

UNCLASSIFIED

PAGE

53

AD- 912 475

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 912 475 17/5 19/1 9/1

RCA ADVANCED TECHNOLOGY LABS CAMDEN N J

Pyroelectric/Integrated Circuit Infrared
Imaging Array Development.

(U)

DESCRIPTIVE NOTE: Final technical rept. 22 Feb 72 - 30
May 73,
JUN 73 142P Boonard, A. ; Hall, D. ;
Herrmann, E. ; Larrabee, R. D. ; Morren, W. ;
CONTRACT: F33615-72-C-1804, ARPA Order-1916
MONITOR: AFAL TR-73-258

UNCLASSIFIED REPORT

DESCRIPTORS: (*IMAGE INTENSIFIERS(ELECTRONICS), INFRARED IMAGES), (*INFRARED IMAGE TUBES, INTEGRATED CIRCUITS), (*INFRARED DETECTORS, PASSIVE SYSTEMS), FIELD EFFECT TRANSISTORS, THERMAL TARGETS, THERMAL INSULATION, SEMICONDUCTING FILMS, TEMPERATURE, INFRARED RADIATION, GAS LASERS, EVAPORATION, INFRARED LASERS, ETCHING, ORGANIC COMPOUNDS, SULFATES, GLYCINE, SILICON, SUBSTRATES, SILICON DIOXIDE
IDENTIFIERS: FAR INFRARED REGION, METAL OXIDE SEMICONDUCTORS, MIDDLE INFRARED REGION, PYROELECTRICITY, Bucket brigades

(U)

(U)

The development of techniques leading to the fabrication of thin polycrystalline triglycine sulfate films and their resulting characteristics as infrared detectors are described. The processing technology required to fabricate pyroelectric/integrated circuit thermal imaging arrays consisting of thin film triglycine sulfate detectors on field effect integrated circuits is reviewed. The primary approach pursued under this program to the problem of providing the required high degree of thermal isolation between the detectors and the silicon substrate was to preferentially etch away the silicon underlying the detectors. In the resulting configuration, the thin thermally grown silicon dioxide membrane remaining after the etching process serves to support the detector. A second thermal isolation technique, in which a thin, permanently poled, single crystal section of TGS is positioned above its companion two-dimensional integrated circuit substrate, is also described.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 912 287 9/1 9/5 20/12

TEXAS INSTRUMENTS INC DALLAS

Silicone Diode Target Tube
Development.

(U)

DESCRIPTIVE NOTE: Final technical rept. 10 Apr 72-10
Apr 73.JUL 73 44P Lawson, James R. : Bean, Kenneth E. : Ahlburn, Byron T. ;
REPT. NO. 11-03-73-41
CONTRACT: F33615-72-C-1332
PROJ: AF-6102
MONITOR: AFAL TR-73-227

UNCLASSIFIED REPORT

DESCRIPTORS: (-VIDICONS, PERFORMANCE(ENGINEERING)), (-SEMICONDUCTOR DIODES, *ELECTRON TUBE TARGETS), MANUFACTURING, ALIGNMENT, ETCHING, PHOTOENGRAVING, SILICON, SEMICONDUCTORS, CARRIERS(SEMICONDUCTORS), PHOTOCONDUCTIVITY, ELECTRON IRRADIATION, NOISE(RADIO), RESOLUTION (U)

IDENTIFIERS: BLOOMING, DARKNESS, ELECTRIC CURRENT, PHOTOELECTRICITY, ELECTRON BOMBARDED SEMICONDUCTORS, MESA DIODES (U)

Improved television blooming control in a silicon-diode-array vidicon target has been achieved using a mesa diode structure with deep valleys etched using the orientation-dependent-etch properties of silicon. A reduction from 13 to 5.6 of the ratio of the bloomed to the unbloomed spot diameters over a 100,000 light level change was accomplished in the vidicon mode. The target process is discussed along with the associated problems. The operating parameters of the targets are compared to those of conventional planar arrays in both the vidicon and the EBS modes of operation. Recommendations are made for future development and target improvement. (Author) (U)

AD- 912 287

UNCLASSIFIED

PAGE

54

AD- 911 088

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 911 088 17/7

MASSACHUSETTS INST OF TECH CAMBRIDGE CHARLES STARK DRAPER
LABAdvanced Inertial Technologies. Volume
I.

(U)

DESCRIPTIVE NOTE: Annual technical rept. 16 Feb 72-16
Feb 73.MAY 73 179P
REPT. NO. R-748
CONTRACT: F33615-72-C-1335
PROJ: AF-6095
TASK: 609502
MONITOR: AFAL TR-73-124-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, Rept. no. R-820, AD-8000 382L.

DESCRIPTORS: (*INERTIAL NAVIGATION, INSTRUMENTATION), GAS BEARINGS, GYROSCOPES, SERVOMECHANISMS, PHASE LOCKED SYSTEMS, ANALOG-TO-DIGITAL CONVERTERS, DIGITAL TO ANALOG CONVERTERS, DIGITAL SYSTEMS, INTERFACES, PULSE DURATION MODULATION, MODULATORS, TRANSFORMATIONS(MATHEMATICS), SPUTTERING, DEPOSITION, ETCHING, RADAR, IMAGE MOTION COMPENSATION, PLANNING (U)

IDENTIFIERS: AVIONICS, HYPHA COMPUTATIONS, MOTION COMPENSATION, PHASE-TO-DIGITAL CONVERTERS, SIGNAL PROCESSING, SINE COSINE GENERATORS (U)

This report describes a first-year exploratory development program of study, design, fabrication, and test of advanced inertial sensing instrument technology and other navigation system technology. Activities covered include: (1) research in spin-axis gas and ball bearings, sputter-etch and sputter-deposition techniques, and Brillouin materials and processing; (2) investigation of new techniques for signal processing and conversion which include hypha phase-locked-loop processing and the use of a microprocessor to perform attitude transformations; and (3) analysis of the problem of radar motion compensation. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 902 458 11/6 1/3

BOEING CO SEATTLE WASH COMMERCIAL AIRPLANE GROUP

SST Technology Follow-On Program, Phase
I. Compatibility of SST Materials with
Titanium Alloys. Volume I. Flyaway
Materials.

(U)

DESCRIPTIVE NOTE: Final rept. on Task 1,
JUL 72 115th Jacobsen, P. S. ; Seneer, A.
E. ;

REPT. NO. D6-60208-1
CONTRACT: DOT-FA-SS-71-12
MONITOR: FAA-SS 72-08-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-902
459L.

DESCRIPTORS: (*AIRFRAMES, JET TRANSPORT PLANES),
(*TITANIUM ALLOYS, STRESS CORROSION), MATERIALS,
COMPATIBILITY, DEFLECTION, BENDING, SURFACE PROPERTIES,
CRACK PROPAGATION, ETCHING, SURFACES, HYDROGEN
EMBRIITLEMENT, SALTS, SILVER COMPOUNDS, CHELATE
COMPOUNDS, CADMIUM, FATIGUE(MECHANICS), AERODYNAMIC
HEATING, THERMAL STRESSES, FAILURE(MECHANICS), TEST
METHODS, SUPERSONIC AIRCRAFT (U)
IDENTIFIERS: HEIMERL-BRASKI MATERIALS, SST TECHNOLOGY
FOLLOW ON PROGRAM, SUPERSONIC TRANSPORTS, TITANIUM
ALLOY 6AL 4V, TITANIUM ALLOY 8AL 1MD 1V (U)

IAC ACCESSION NUMBER: MCIC-084283

IAC DOCUMENT TYPE: MCIC -HARD COPY--

This document presents data on the compatibility of
titanium alloys Ti-8Al-1Mo-1V and Ti-6Al-
4V with flyaway materials, materials which might
contact titanium in the airplane during its
operation, proposed for use on the U.S.A.
supersonic transport. Testing procedures are
described in detail and results are tabulated.
Flyaway materials were applied to two types of test
specimens: Heimerl-Braski self-stressed
specimens, which were subjected to a bend deflection
test following exposure, and simple U-bend
specimens. For the Heimerl-Braski specimen
configuration, a comparative statistical analysis of
bend deflection test results was conducted.

(U)

AD- 902 458

UNCLASSIFIED

PAGE

55

AD- 900 343

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 900 343 9/5

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y

Thin Film Hybrid Pulse Width
Discriminator Circuit Fabrication.

(U)

DESCRIPTIVE NOTE: Technical rept.,
MAY 72 42P Dixon, Charles J. ;
REPT. NO. RADC-TR-72-118

UNCLASSIFIED REPORT

DESCRIPTORS: (*DISCRIMINATORS, INTEGRATED CIRCUITS),
TRANSISTORS, RESISTORS, FILMS, CAPACITORS,
GATES(CIRCUITS), SEMICONDUCTOR DIODES, SUBSTRATES,
TANTALUM, SHEETS, MANUFACTURING, ETCHING, GOLD,
NITRATES

(U)

IDENTIFIERS: NAND GATES, NICHROME, *PULSE WIDTH
DISCRIMINATORS, SCHOTTKY BARRIER DEVICES,
SEMICONDUCTOR DIODES, THIN FILMS (U)

This report describes the in-house fabrication of a
small quantity of pulse width discriminator circuits
in thin film form. Special attention is given to
the problems of undercutting while etching and
variations in sheet resistivity of the resistive
films. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 900 280 9/1 20/7

TEXAS INSTRUMENTS INC DALLAS

Production Engineering Measure for an
Electron-Beam Machine and Microwave
Transistors.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 3, 1 Oct 71-1
Jan 72.

JAN 72 38P Webster, Roger R. ; Varnell,
Gilbert L. ; Ch'en, Daniel ;
REPT. NO. T1-03-72-25
CONTRACT: DAAB05-71-C-3715

UNCLASSIFIED REPORT

DESCRIPTORS: (*TRANSISTORS, ELECTRON BEAMS),
MANUFACTURING, MICROWAVE FREQUENCY, ACRYLIC RESINS,
MASKING, GOLD, ETCHING, SPUTTERING, NITRIDES, SILICON,
STYRENE PLASTICS, SUBSTRATES, C BAND, OXIDES, DOPING,
BORON, ARSENIC (U)
IDENTIFIERS: PRODUCTION ENGINEERING MEASURE (U)

IAC ACCESSION NUMBER: PL-017962

IAC DOCUMENT TYPE: PLASTIC-MICROFICHE--

Significant steps were made toward establishing a fully computer-controlled electron-beam delineation capability for fabrication of microwave transistors. The first lot of slices (EBT-1) was processed through all the microwave transistor 'masking' levels to establish electron resist and etching processes. Significant problems were not encountered using PMMA RESIST UNTIL THE CONTACT 'MASKING' LEVEL. A CHANGE IN THE ETCH RATE OF THE SPUTTERED GOLD DUE TO ELECTRON-BEAM IRRADIATION CAUSED SEVERE UNDERCUTTING OF THE EMITTER FINGERS USING PMMA and conventional chemical etching techniques. A negative electron resist polystyrene was utilized on Lot EBT-5 to take advantage of this etch rate differential. Polystyrene enabled delineation of 0.7 m emitter contact fingers on all slices in this lot. Evaluation of the transistors from Lot EBT-5 is in progress. Excellent progress was made this quarter toward fully automating pattern registration for fabrication of 6 GHz transistors. Lots EBT-4 and EBT-5 were used to test the alignment capability of the automatic pattern registration (APR) system on wafers going through the 6 GHz transistor process.

(U)

AD- 900 280

UNCLASSIFIED

PAGE

56

AD- 863 068

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 863 068 9/1

GENERAL TELEPHONE AND ELECTRONICS LABS INC BAYSIDE N Y
BAYSIDE RESEARCH CENTER

High Capacitance Thin Film Structures.

(U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 2, 5 Jun-4 Sep 69.

DEC 69 6P Wasserman, Moe S. ;
Feuersanger, Alfred E. ;
REPT. NO. GT/E-TR-69-832.2
CONTRACT: DAAB07-69-C-0194
PROJ: DA-1-H-662705-A-440
TASK: 1-H-662705-A-44001
MONITOR: ECOM 0194-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly progress rept. no. 1 dated Aug 69, AD-858 382.
DESCRIPTORS: (*INTEGRATED CIRCUITS, FIXED CAPACITORS),
(*FIXED CAPACITORS, FILMS), NICKEL COMPOUNDS, OXIDES,
SPUTTERING, MANUFACTURING, ETCHING (U)
IDENTIFIERS: NICKEL OXIDES, THIN FILMS (U)

The deposition conditions were established for high-capacitance nickel oxide films in the new multiple-source deposition system. Preliminary life test data and information on the uniformity of characteristics were obtained, and a procedure was developed for photolithographic etching of the nickel oxide films which is expected to be adaptable to silicon integrated processing. Characterization of the film surfaces by electron microscopy was also performed. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 860 343 9/1 17/1

RCA ELECTRONIC COMPONENTS SOMERVILLE N J

5-Kilowatt, 1-Kilovolt, Laminated Sonar Transistor.

(U)

DESCRIPTIVE NOTE: Interim engineering rept. no. 2, 1

Apr-30 Jun 69,

SEP 69

Becke, Hans W. ; White,

Joseph P. ;

CONTRACT: N00039-69-C-2543

PROJ: XF-52-545-004

TASK: 8077

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Interim engineering rept. no. 1, AD-853 206.

DESCRIPTORS: (*TRANSISTORS, SONAR EQUIPMENT), DESIGN, SILICON, MANUFACTURING, PELLETS, ETCHING, ELECTRICAL RESISTANCE

(U)

IDENTIFIERS: JUNCTION TRANSISTORS

(U)

Results of 25 design IIIA pressings are discussed. Various types of base-collector structures were used. Measurements on 14 completed transistors are described. A theoretical model of thermal instability, which shows the importance of base series resistance at higher voltages, is investigated. The process is being modified to achieve additional base ballasting which should result in improved second breakdown performance without impairing other device characteristics. Further work on preferential etching, demonstrating the advantages of this method over cavitroning, is described. A package design for paralleling up to six pellets is included. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 841 860 11/6

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

APPLICATION OF THE POTENTIAL POLARIZATION IN THE STUDY AND IN THE METALLOGRAPHY OF CORROSION RESISTANT STEELS.

(U)

NOV 67 37P Cihal, Vladimir ;

REPT. NO. FTD-HT-67-170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Hutnicke Listy (Czechoslovakia) n11 p817-840 1965 (sic).
DESCRIPTORS: (*CORROSION RESISTANT ALLOYS, *STEEL), (*METALLOGRAPHY, CORROSION RESISTANT ALLOYS), POLARIZATION, PHASE STUDIES, ETCHING, CZECHOSLOVAKIA
IDENTIFIERS: TRANSLATIONS

(U)

(U)

IAC ACCESSION NUMBER: MCIC-073802

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The study describes the application of potential polarization particularly for the study of corrosion resistant steels. The advantages of this method as compared to the current classical electrochemical method are evaluated. The characteristics of a potentiostat and the potential polarization curve with its significant regions are described. The application of the potentiostat is directed toward the study of the passivity of corrosion resistant steels, toward the study of the influence of alloy elements on the corrosion resistance and toward the quality testing of corrosion resistant steels. A procedure was found for the determination of the degree of differentiation of individual phases of corrosion resistant steels in electrolytic etching based on the comparison of their potential polarization curves. Potentials suitable for a selective etching of ferrite, austenite and phase sigma were determined. From the course of the polarization curve it is possible to select not only the manner of etching but also to identify roughly the phases present in the steel. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 833 329 9/5 11/3 13/8
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING
EFFECT ON ETCH RATE OF OXIDE SURFACES AFTER ELECTRON
BOMBARDMENT. (U)

DESCRIPTIVE NOTE: Master's thesis,
MAR 68 64P Howard, Joe A. ;
REPT. NO. GE/EE/6C-7

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, MANUFACTURING),
(*OXIDES, ELECTRON IRRADIATION), (*ETCHING, OXIDES),
METAL FILMS, SURFACES, ELECTRON MICROSCOPY, SPUTTERING,
VAPOR PLATING, SILICON DIOXIDE, ALUMINA, ANODIC
COATINGS, HEAT RESISTANT GLASS, TANTALUM COMPOUNDS,
THESES (U)
IDENTIFIERS: SCANNING ELECTRON MICROSCOPES, TANTALUM
OXIDE (U)

Effects on the etch rate of oxide films after
irradiation with 10-to 20-kev electrons have been
studied using the scanning electron microscope as a
source of electrons. Five types of films were
investigated: thermally grown SiO₂, evaporated
Al₂O₃, anodic Al₂O₃, anodic Ta₂O₅, and
rf-sputtered Pyrex. Results verified the
enhanced etch rate of SiO₂ and showed a retarded
etch rate for Al₂O₃ and Ta₂O₅; results of
the investigation of Pyrex were inconclusive.
The retardation of evaporated Al₂O₃ varied
linearly with the accumulated surface charge density
until saturation was reached at 2.0 C/sq cm.
Evaporated Al₂O₃ exhibited a retardation factor
of 1.51. (Author) (U)

AD- 833 329

UNCLASSIFIED

PAGE

58

AD- 833 283

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 833 283 9/1 20/12 13/8
AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING
AU-ZNTE SCHOTTKY BARRIER FABRICATION BY LOW-ENERGY
ION ETCHING TECHNIQUES. (U)

DESCRIPTIVE NOTE: Master's thesis,
MAR 68 53P Mannex, Henry R. ;
REPT. NO. GE/EE/68-13

UNCLASSIFIED REPORT

DESCRIPTORS: (*CRYSTAL RECTIFIERS, ETCHING),
SEMICONDUCTORS, MANUFACTURING, METAL FILMS, SPUTTERING,
GOLD, GALLIUM ARSENIDES, SEMICONDUCTOR DIODES, BAND
THEORY OF SOLIDS, SURFACES, THESES (U)
IDENTIFIERS: HETEROJUNCTIONS, ION ETCHING, SCHOTTKY
BARRIER DEVICES, SCHOTTKY BARRIER DEVICES,
SEMICONDUCTOR DIODES, ZINC TELLURIDES (U)

A new method for semiconductor surface preparation
for fabrication of metal-semiconductor rectifying
heterojunctions is proposed and junctions of gold on
gallium arsenide and gold on zinc telluride have been
analyzed. The barrier heights for Au-GaAs
diodes fabricated by low-energy (100 eV) ion
etching of GaAs surfaces immediately prior to
metallization were found to be in excellent agreement
with barrier height of diodes fabricated by vacuum
cleaving techniques. The most probable value of
barrier height for Au-ZnTe structures
fabricated by the ion etching technique was
determined to be 0.48 eV with a maximum deviation
of 0.03 eV. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 829 039 13/8

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

CHEMICAL MILLING HIGH-TEMPERATURE ALLOYS AND STEELS.

DESCRIPTIVE NOTE: Final rept.,
JUN 61 60P Glenski, F. J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*HEAT RESISTANT ALLOYS, *CHEMICAL MILLING), (*STEEL, CHEMICAL MILLING), TABLES(DATA), CHROMIUM ALLOYS, NICKEL ALLOYS, COBALT ALLOYS, MOLYBDENUM ALLOYS, TUNGSTEN ALLOYS, TEST METHODS, TITANIUM ALLOYS, ALUMINUM ALLOYS, IRON ALLOYS, NIOBIUM ALLOYS, ETCHING, (U)ETCHING (U)

A study of the etching characteristics of several stainless steels and high-temperature alloys was made using modified aqua regia etchants. Chemically milled samples were inspected, measured and results recorded. Photographs of typical chemically milled specimens are included. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 818 789 20/3 13/8

RAYTHEON CO WALTHAM MASS RESEARCH DIV

STUDY OF MICROWAVE GENERATION BY MEANS OF INTERACTION WITH ANISOTROPIC MEDIA. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 8, 1 Mar-31 May 67,

AUG 67 23P Osepchuk, John M. ; Simpson, James ;

REPT. NO. S-975

CONTRACT: DA-28-043-MC-Ji314(E)

PROJ: DA-1E6-22001-A-055

TASK: 1E6-22001-A-055-04

MONITOR: ECOM 01314-8

UNCLASSIFIED REPORT

DESCRIPTORS: (*ANISOTROPY, *ELECTROMAGNETIC RADIATION), (*RADIOFREQUENCY, MATERIALS), MOLYBDENUM, STEEL, BRAZING, BORON COMPOUNDS, NITRIDES, ZIRCONIUM COMPOUNDS, ETCHING, COPPER, WETTING, ATTENUATION, CONFIGURATION, FEASIBILITY STUDIES, INTERACTIONS, FRAGMENTATION, NICKEL, GOLD, CHLORIDES, DEPOSITION, DIELECTRICS (U)

A layered anisotropic material is prepared by stacking molybdenum and steel and then etching the steel away. Experiments in the layering of zirconium diboride and boron nitride are continued. A new anisotropic sheath formed by scribing or etching bars in a thin zirconium diboride sheet is proposed. A slow-wave circuit employing an anisotropic sheet to simulate an interdigital line is analyzed. (U)

AD- 829 039

UNCLASSIFIED

PAGE

59

AD- 818 789

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 815 000

9/1

RADIO CORP OF AMERICA SOMERVILLE N J ELECTRONIC COMPONENTS AND DEVICES

300 C SEMICONDUCTOR FOR POWER DEVICES. (U)

DESCRIPTIVE NOTE: Interim technical rept. no. 3, 1 Jan-31 Mar 67, MAY 67 39P Krassner, L. ; Enstrom, R. E.

CONTRACT: AF 33(615)-5352

UNCLASSIFIED REPORT

DESCRIPTORS: (*RECTIFIERS, SEMICONDUCTOR DEVICES), VOLTAGE, DEPOSITION, GALLIUM COMPOUNDS, ARSENIDES, CRYSTAL GROWTH, SEMICONDUCTOR DIODES, MANUFACTURING, EPITAXIAL GROWTH, COATINGS, CAPACITANCE, ETCHING, SUBSTRATES (U)

During the period covering this report, vapor-phase, epitaxial p-n junctions were grown in gallium arsenide, and the effects of several parameters, including temperature and substrate condition on the junction quality, were studied. Microplasmas still limit the breakdown of large-area diodes (0.100-inch diameter) but for diodes of smaller size (0.030-inch diameter) the breakdown is now limited only by material purity. Improved procedures for etching gallium-arsenide junctions were developed so that the breakdown determined by the material parameters can be measured with surface conditions having a minimum effect. The preservation of such stable surfaces over long periods was not achieved completely, however. Techniques for package mounting diodes, were partly developed, permitting some forward-bias measurements. In addition, some analysis of junction profiles through capacitance-voltage plate was made. (Author) (U)

AD- 815 000

UNCLASSIFIED

PAGE

60

AD- 809 337

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 809 337 7/4 9/5

GENERAL ELECTRIC CO SCHENECTADY N Y RESEARCH AND DEVELOPMENT CENTER.

PHOTOMETALLIC PROCESS INVESTIGATION. (U)

DESCRIPTIVE NOTE: Final development rept. 1 Dec 65-30 Nov 66.

JAN 67 52P Schaefer, Donald L. ;

REPT. NO. S-67-1007

CONTRACT: N0bsn-95045

UNCLASSIFIED REPORT

DESCRIPTORS: (*MICROELECTRONICS, *CIRCUITS), (*PHOTOCHEMICAL REACTIONS, *DECOMPOSITION), METAL FILMS, PHOTOENGRAVING, ETCHING, SILICON DIOXIDE, FILMS, GOLD, ALUMINUM, NICKEL, CHROMIUM, HALOGENS, POLYMERS, REACTION KINETICS, CARBINOLS, SOLVENTS, STYRENE PLASTICS, SENSITIVITY (U) IDENTIFIERS: THIN FILMS, THIN FILM ELECTRONICS (U)

IAC ACCESSION NUMBER: PL-010349
IAC DOCUMENT TYPE: PLASTIC -HARD COPY--
This is the Final Technical Report of a twelve month program to investigate and develop the Photometallic process. The broad objective of the program was the fabrication of microelectronic circuits in thin films of gold, nichrome, aluminum and silicon dioxide by a process in which these materials are directly etched by a photosensitive material according to an incident light pattern. A balanced program of basic investigation and application orientation experimentation has resulted in photosensitive polymer films that etch the thin film in a pattern corresponding to the areas exposed to activating radiation. This investigational program has been advanced to the point where 30 to 50 lines per millimeter resolution has been obtained even at this early stage of process development. A preferred etching system for gold in N₂M₂ dibromodimethylidantoin dissolved in an alcohol soluble butyrate polymer with methanol as a system solvent. Nichrome can be etched with the same system but if ferric chloride is used as the photosensitive material, the system etches nichrome selectively and not gold.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 804 296

13/8

JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LABADVANCEMENTS IN SPACE FLIGHT HARDWARE THROUGH
CHEMICAL MILLING.

(U)

DESCRIPTIVE NOTE: Technical memo...
 SEP 66 31P Hicks, Robert E. ;
 REPT. NO. TG-858
 CONTRACT: NO-62-0604

UNCLASSIFIED REPORT

DESCRIPTORS: (*CHEMICAL MILLING, ETCHING), REDUCTION,
 WEIGHT, HARDNESS, THICKNESS, METALS, STRESSES,
 BRITTLENESS, PHYSICAL PROPERTIES, SILICON, PLATING,
 MACHINING

(U)

IAC ACCESSION NUMBER: MCIC-071287

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The art of chemical metal removal is by no means
 new. It has been used by photoengravers for
 decades in the preparation of printing and engraving
 plates. This technique has also been used in the
 fabrication of decorative metalwork and nameplates.
 The latest innovation is the processing of the
 etched printed circuit; however, only within recent
 years has the potential of chemical metal removal
 been recognized. In spite of the tremendous
 advantages the process has to offer, its use has been
 limited to only a few applications; but as the
 equipment and know-how are becoming more readily
 available, the use of chemical milling as a
 production metal removal process is now taking its
 place as a specialized metalworking process. With
 the demands for special hardware in satellite and
 other space applications steadily increasing,
 designers find they can satisfy many of these demands
 with the aid of chemical milling. (Author)

(U)

AD- 804 296

UNCLASSIFIED

PAGE

81

AD- 803 613

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 803 613

11/6

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

INVESTIGATION OF SINGLE-CRYSTAL DIMOLYBDENUM
CARBIDE.

(U)

DESCRIPTIVE NOTE: Technical documentary rept. Oct 63-
 Feb 66,
 AUG 66 168P Vahldiek, Fred W. ;Mersol,
 Stanley A. ;Lynch, Charles T. ;
 REPT. NO. AFML-TR-66-268
 PROJ: AF-7350
 TASK: 735001

UNCLASSIFIED REPORT

DESCRIPTORS: (*SINGLE CRYSTALS, *CARBIDES), (*MOLYBDENUM
 COMPOUNDS, CARBIDES), CRYSTAL SUBSTRUCTURE, CRYSTAL
 GROWTH, ELECTRON MICROSCOPY, ETCHING, ELECTRON
 DIFFRACTION, MICROSTRUCTURE, ANNEALING, SPECTRUM
 ANALYZERS, EMISSIVITY, HARDNESS, CRYSTAL DEFECTS,
 TEMPERATURE, DEFECTS(MATERIALS), OPTICAL EQUIPMENT,
 CHEMICAL ANALYSIS, ELASTIC PROPERTIES, ELECTRICAL
 RESISTANCE, TWINNING(CRYSTALLOGRAPHY), BONDING

(U)

A veining substructure was observed on all planes
 of the as-grown Mo2C crystals, using optical and
 electron microscopy. Effects of annealing on the
 Mo2C matrix and the veining substructure at
 temperatures ranging from 1600 to 2200 C were
 studied. Certain phase relationships in these
 crystals were determined, using a combination of
 chemical, x-ray, emission spectrographic, electron
 diffraction, and electron microprobe analyses.
 Dislocation etch pits brought out on Mo2C
 crystals by etching were studied relative to the
 Mo2C structure and phase relationships found at
 various temperatures. Anisotropy in room
 temperature microhardness, elastic modulus,
 electrical resistivity, and Debye temperature was
 determined. Effects of annealing on microhardness
 were also studied. It was established that slip
 and twinning are produced by microhardness
 indentations at room temperature. The primary slip
 and twin systems for Mo2C were determined.
 Bonding mechanism in Mo2C is discussed and
 certain comparisons are made with polycrystalline
 Mo2C and MoC. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 802 516

9/2

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 5, 1 Apr-30 Jun 66, OCT 66 39P Rogers, K. T.; Cogswell, D.

L. I.
 CONTRACT: DA-28-043-AMC-01261(E)
 PROJ: DA-1P6-22001-A-055, SRI-5444
 TASK: 1P6-22001-A-055-03
 MONITOR: ECOM 01261-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*MEMORY DEVICES, *ELECTRON BEAMS),
 (*ELECTRON MICROSCOPY, FIELD EMISSION),
 (*MICROELECTRONICS, FEASIBILITY STUDIES), HYDROGEN
 COMPOUNDS, MOSAICS(LIGHT SENSITIVE), METALS, DIELECTRIC
 FILMS, PROBES(ELECTROMAGNETIC), DATA PROCESSING,
 RESOLUTION, ELECTRON BEAMS, ELECTRON OPTICS, SCANNING,
 INTERFERENCE, MAGNETIC FIELDS, CHLORIDES, SAPPHIRE,
 SUBSTRATES, MOLYBDENUM, FILMS, CAPACITORS, ELECTRON
 MULTIPLIERS, MASKING, STYRENE PLASTICS, ETCHING,
 OXYGEN (U)

IDENTIFIERS: HYDROGEN CHLORIDE, THIN FILMS, THIN FILM
 ELECTRONICS (U)

This report discusses contrast measurements taken with an unbreakable field-emitter scanning electron microscope on targets consisting of metal-dielectric-metal film sandwiches on substrates, with small holes through the first two layers. Synchronous lock-in amplification is shown to override stray electron noise, permitting the detection of target holes. Variations of secondary electron contrast with sandwich potential and electron multiplier bias are presented. Effects of electron polymerization contamination, ambient ac magnetic fields, and stray electron noise on the performance of this instrument are described. The conversion of a small, relatively inexpensive commercial electron microscope into an electron probe, for use in producing regular arrays of storage elements, is described, and the first results on resist exposure and development are presented. Related work on molybdenum etching with mixtures of O₂ and HCl, and on bombardment-induced-conductivity measurements are discussed (U)

AD- 802 516

UNCLASSIFIED

PAGE

62

AD- 801 736

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 801 736

9/5

17/9

TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR-COMPONENTS DIV

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 1, 1 Mar-31 Mar 66, OCT 66 52P Teague, E. Clayton; Watelski, Stacy B.;

REPT. NO: 11-03-66-81
 CONTRACT: DA-28-043-AMC-02029(E)
 PROJ: DA-1E6-22001-A-440
 TASK: 03
 MONITOR: ECOM 02029-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, *GERMANIUM),
 (*TRANSISTORS, *MANUFACTURING), DEPOSITION, GALLIUM ALLOYS, ARSENIC ALLOYS, SUBSTRATES, EPITAXIAL GROWTH, ELECTRIC INSULATION, DOPING, CHROMIUM, ELECTRICAL PROPERTIES, DIFFUSION, CHLORIDES, GERMANIUM COMPOUNDS, HYDRIDES, DECOMPOSITION, ETCHING, IMPURITIES (U)

The program objective is to deposit germanium islands suitable for fabricating high frequency germanium transistors, while maintaining the isolation characteristics of the semi-insulating gallium arsenide. A theoretical description of the mechanism by which chromium doping achieves semi-insulating GaAs, a summary of crystal growth and slice processing techniques, and studies related to the thermal stability of the resulting GaAs is presented. Pertinent physical and electrical properties of the Ge-GaAs system have been compiled. A worst-case calculation shows that the effect of Ge diffusing into GaAs should place little or no restriction upon possible integrated circuit structures. Various process parameters of epitaxial growth by germanium tetrachloride reduction and germanium hydride pyrolysis which affect epitaxial layer quality have been investigated. Those studied during this quarter's work include: Substrate orientation. Substrate crystalline perfection and surface cleanliness. Methods of in situ vapor etching GaAs. Deposition rate and temperature. Halide and hydride concentration.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 801 472 11/6 20/2

NEW YORK UNIV N Y RESEARCH DIV

A STUDY OF THE CRYSTAL STRUCTURE OF TI-AL ALLOYS AND
HYDROGEN INDUCED EXPANSIONS. (U)

DESCRIPTIVE NOTE: Final rept. 1 Jan 64-30 Sep 65.
SEP 66 91P Portisch, H. ; Margolin, H. ;
CONTRACT: DA-ARO(D)-31-124-G519
PROJ: DA-20010501B700. AROD-2513
MONITOR: AROD 2513:1

UNCLASSIFIED REPORT

DESCRIPTORS: (•)TITANIUM ALLOYS, ALUMINUM ALLOYS),
CRYSTAL STRUCTURE, SINGLE CRYSTALS, HYDROGEN,
MICROSTRUCTURE, X RAY DIFFRACTION, TEMPERATURE, ETCHED
CRYSTALS, ETCHING, DENSITY, HEAT TREATMENT (U)

The structure of a Ti-Al phase reported on
gamma Ti3Al has been found by single crystal x-
ray studies to be alpha Ti with superlattice spots
of Ti3Al. A surface expansion, found to occur
after etching alloys containing 9.5-12.5 wt% Al,
occurs as a result of hydrogen picked up by etching.
It is proposed that hydrogen initially enters
octahedral sites of Ti3Al coherent with alpha
Ti and later shifts to the tetrahedral sites. It
is postulated that expansion occurs when the hydrogen
enters the tetrahedral sites. (Author) (U)

AD- 801 472

UNCLASSIFIED

PAGE

63

AD- 783 086

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 783 086 11/2

RENSELAER POLYTECHNIC INST TROY N Y MATERIALS DIV

Fracture Strength of Soda-Lime Glass after
Etching. (U)

DESCRIPTIVE NOTE: Technical rept.,
JUN 74 26P Doremus, Robert H. ;
Pavelchek, Edward K. ;
CONTRACT: N00014-67-A-0117-0014
PROJ: NR-023-531

UNCLASSIFIED REPORT

DESCRIPTORS: *Alkali glass,
*Fracture(Mechanics), Etching, Cryogenics,
Crack propagation (U)

IAC ACCESSION NUMBER: MCIC-090025
IAC DOCUMENT TYPE: MCIC -HARD COPY--
The strength of soda-lime glass at liquid nitrogen
temperature after various amounts of etching was
measured. A median crack length of 6 micrometers
was calculated from the results and a model of the
etching process. It was found that the rate of
etching at the crack tip was much lower than on the
external surface. Measured distributions of
strength for samples etched different depths were
also in reasonable agreement with calculated
distributions. The etching process itself was found
to cause some weakening of the glass.
(Author) (U)

IAC SUBJECT TERMS: M--(U)SODA-LIME GLASS, ETCHING, LIQUID
NITROGEN TEMPERATURE FRACTURE STRENGTH.;

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 782 980 9/1

TORONTO UNIV (ONTARIO) DEPT OF ELECTRICAL
ENGINEERING

Moat-Etched Two-Phase Charge-Coupled
Devices, (U)

AUG 73 9P Gelberger, P. P. ; Salama, C.
A. T. ;

UNCLASSIFIED REPORT

Availability: Pub. in Solid-State Electronics,
v17 p301-305 1974.

SUPPLEMENTARY NOTE: Revision of report dated 18 Jun
73.

DESCRIPTORS: *Charge coupled devices, Fabrication,
Etching, Silicon, Silicon dioxide, Metal oxide
semiconductors, Canada (U)

A novel technique for fabricating two-phase charge-
coupled devices is described. The structure
requires only thermally grown SiO₂ and makes use
of moats etched into the silicon which in conjunction
with a single layer metallization achieve small
interelectrode spacings and directionality of charge
transport. The feasibility of the technique is
demonstrated experimentally. The devices
fabricated were successfully operated as both digital
and analog shift registers. The method described
offers certain advantages in ease of fabrication and
reliability along with the capability for high speed
operation. (Author) (U)

AD- 782 980

UNCLASSIFIED

PAGE

64

AD- 781 831

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 781 831 9/5 13/8

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

A Study of the Etching Characteristics of
Semiconductor Materials in RF Plasmas. (U)

DESCRIPTIVE NOTE: Master's thesis,
JUN 74 77P Shy, James Dale ;
REPT. NO. GE/EE/74-35

UNCLASSIFIED REPORT

DESCRIPTORS: *Etching, *Semiconductors,
*Microcircuits, Plasmas (Physics), Gases,
Glass, Silicon nitride, Silicon dioxide,
Silicon, Microelectronics, Wafers, Fabrication,
Theses (U)

An experimental study was made on the use of plasma
etching machines to etch semiconductor materials used
in microcircuit fabrication processes. Plasmas were
used to etch a number of materials to include
phosphosilicate glass, silicon nitride, chemically
vapor deposited silicon dioxide, epitaxially
deposited silicon dioxide, and silicon. Etching
characteristics of these materials were obtained in a
variety of operating conditions ranging from
variations of power from 0 to 400 watts, pressure
from 0 to 0.50 torr, and gas flow from 0 to 500 cc
per minute. The etching technique was then used to
etch circuit wafers which were developed into
microcircuits. Results demonstrated that the
plasma etching process could be used in place of
chemical etchants. Yield of usable devices from the
circuit wafers varied from 10% to 70% per wafer;
however, no damage was attributed to the plasma
etching process. A limited investigation into the
etching of multiple passivation layers was conducted
but was not completed. (Modified author
abstract) (U)

AD- 782 980

UNCLASSIFIED

PAGE

64

AD- 781 831

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 777 000 19/1

NATIONAL MATERIALS ADVISORY BOARD (NAS-NAE) WASHINGTON D C

Alternate Production Processes for Fuze Pinions.

(U)

DESCRIPTIVE NOTE: Final rept.

JAN 74 65P

REPT. NO. NMAB-311

CONTRACT: DAAA25-73-C-0316

UNCLASSIFIED REPORT

DESCRIPTORS: *Projectile fuzes, *Gears, production, Processing, Casting, Moldings, Powder metallurgy, Etching, Chemicals, Diffusion bonding, Fuzes(Ordnance)

(U)

IDENTIFIERS: *Pinions

(U)

A study was conducted of possible methods for producing small pinions that would not involve use of imported machinery or scarce skills. Four methods were identified: zinc die casting, plastic molding, powder compaction, and chemical etching/diffusion bonding. All processes are probably economically competitive, but each has some limitations, which are outlined. Additional recommendations of a more general nature are included. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 775 466 11/6 14/2

GENERAL DYNAMICS FORT WORTH TEX CONVAIR AFROSPACE DIV

Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 72-1 Oct 73,

DEC 73 130P Regalbuto, John A. ;

CONTRACT: DAAG46-73-C-0067

PROJ: DA-1728041

MONITOR: GIDEP, GIDEP E043-2093,556.45.30.00-EO-

01

UNCLASSIFIED REPORT

DESCRIPTORS: *Titanium alloys, *Nondestructive testing, *Diffusion bonding, Aluminum alloys, Vanadium alloys, Ultrasonic tests, X rays, Etching, Fractography, Defects(Materials), Fatigue(Mechanics)

(U)

IDENTIFIERS: Titanium alloy 6Al 4V

(U)

IAC ACCESSION NUMBER: NT-013800

IAC DOCUMENT TYPE: NTIAC -HARD COPY--

This report describes the establishment of nondestructive testing techniques for diffusion bonded structures fabricated from Ti-6Al-4V sheet and forgings. Ultrasonic shear waves, radio frequency and signal-averaged pulse-echo techniques, x-ray, fluorescent penetrant, and blue-etch-anodize were used to inspect a series of diffusion bonded defect specimens. Analysis of NDT, mechanical property, and fractographic data indicated that shear wave inspection of the sheet material could be correlated with the observed decrease in fatigue life with defect concentration. Shear strength of the sheet specimens was not affected by the presence of the internal defects to any measurable degree. Grain structure noise limited inspectability of the small (0.006-in. dia.) defects in the diffusion bonded forging. (Author)

(U)

IAC SUBJECT TERMS: N--(U)TITANIUM, ALLOYS, DIFFUSION, BONDING, ULTRASONIC TESTING, STRUCTURES, SHEAR WAVES, RADIOFREQUENCY, PULSE ECHO TECHNIQUE, X RAYS, PENETRANTS, FLUORESCENCE, ETCHING;

AD- 777 000

UNCLASSIFIED

PAGE

65

AD- 775 466

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 773 296

9/1

TORONTO UNIV (ONTARIO) DEPT OF ELECTRICAL
ENGINEERING

V Groove M.O.S. Transistor Technology,

(U)

AUG 73 3P Holmes, F. E. ; Salama, C.

A. T. ;

UNCLASSIFIED REPORT

Availability: Pub. in the Electronics Letters,
v9 n19 p1-2, 20 Sep 73.

DESCRIPTORS: *Field effect transistors,
*Transistors. *Integrated circuits, Metal oxide
semiconductors, Fabrication, Silicon, Etching,
Masking, Semiconductors, Canada
IDENTIFIERS: *Metal oxide transistors

(U)

(U)

An metal oxide semiconductor transistor structure
in which the channel is defined by preferential
etching of the silicon is described. The
fabrication technology involves either a 3- or 4-mask
process, and results in very-short-channel devices,
using noncritical alignment tolerances.
Experimental results obtained on the fabricated
devices are presented, and possible uses of the
technology are described. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 772 617

11/6

20/2

ILLINOIS UNIV URBANA DEPT OF METALLURGY AND MINING
ENGINEERING

Dislocation Etch Pitting in High-Purity
Niobium.

(U)

DESCRIPTIVE NOTE: Technical rept.,
DEC 73 11P Watson, R. P. ; Birnbaum, H.
K. ;

CONTRACT: N00014-67-A-0305-0020

UNCLASSIFIED REPORT

DESCRIPTORS: *Niobium, *Etching, *Dislocations,
Microstructure

(U)

A technique for etch-pitting screw and mixed
dislocations in high purity niobium is described.

(U)

AD- 773 296

UNCLASSIFIED

PAGE

66

AD- 772 617

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 772 045 11/6

GEORGIA INST OF TECH ATLANTA SCHOOL OF CHEMICAL
ENGINEERING

Thermal Etching of Beta Ti-V Alloys. (U)

72 TIP Ling, Fu-Wen ;Starke, E.

A. , Jr;

REPT. NO. TR-74-1

CONTRACT: N00014-67-A-0155-0015

PROJ: NR-031-750

UNCLASSIFIED REPORT

Availability: Pub. in Metallography, v5 p399-407
1972.DESCRIPTORS: *Titanium alloys, *Vanadium alloys,
*Etching, Heat, Microstructure, Dislocations,
Surfaces, Orientation(Direction)

The paper describes the thermal etching of beta-Ti-V alloys by annealing in vacuum at 900C. The thermal-etch pits and facets are correlated with dislocations. Using crystals of known orientation it has been determined that the facets consist of either (100), (110), or (112) planes and that the morphology of the pits depends on the surface orientation. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 769 857 20/2

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Fabrication Procedure for Silicon Membrane
X-Ray Lithography Masks. (U)

DESCRIPTIVE NOTE: Technical note,

SEP 73 14P Cohen, Ronald A. ;Mountain,

Robert W. ;Smith, Henry I. ;Lemna, Muriel A.

;Spears, David L. ;

REPT. NO. TN-1973-38

CONTRACT: F19628-73-C-0002

PROJ: DA-7-X-263304-D-215

MONITOR: ESD TR-73-248

UNCLASSIFIED REPORT

DESCRIPTORS: (*X ray diffraction, *Masking),
[*Wafers, X ray diffraction], Silicon,
Membranes, Etching, Boron, Fabrication

(U)

A step-by-step procedure for the fabrication of silicon membrane x-ray lithography masks is described. The procedure involves the diffusion of boron into the polished face of an n-type <100> silicon wafer, the formation of gold absorber patterns on the boron diffused face, and the selective etching of the n-type silicon so as to produce thin membranes (2 to 5 microns thick) of silicon supporting the absorber patterns. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 769 129 11/6 20/12

ILLINOIS UNIV URBANA DEPT OF METALLURGY AND MINING
ENGINEERINGDislocation Velocity Measurements in High
Purity Niobium. (U)

DESCRIPTIVE NOTE: Technical rept.,
OCT 73 140P Watson, Robert P. ; Birnbaum,
Howard K. ;
CONTRACT: N00014-67-A-0305-0020

UNCLASSIFIED REPORT

DESCRIPTORS: (•Niobium, •Dislocations), Plastic
deformation, Etching, Stresses, Low temperature,
Single crystals, Velocity, Theses (U)

IAC ACCESSION NUMBER: MCIC-088360

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The velocity of screw dislocations on (211)
planes, mixed dislocations on (101) planes, and
mixed dislocations on (211) planes has been
investigated microscopically in ultra-high purity
niobium single crystals using Berg-Barrett X-
ray topographs and chemical etching technique.
The Berg-Barrett X-ray topographic technique
was found to be unsatisfactory for resolving
individual dislocations or slip lines in the niobium
used in this investigation. Chemical etching on
the other hand produced satisfactory results and
allowed the study of individual dislocations. An
asymmetry of the velocity of screw dislocations on
(211) planes was observed between a state of
compression and a state of tension at room
temperature. The screw and mixed dislocation
velocities could be described by a power law
dependence on stress. (Modified author
abstract) (U)

IAC SUBJECT TERMS: N--(U)UNALLOYED COLUMBIUM, TWINNING,
COMPRESSIVE STRESSES, DISLOCATIONS, VELOCITY, SLIP, SHEAR
STRESS, X-RAY ANALYSIS, TENSILE YIELD STRENGTH, LOW
TEMPERATURES, LITERATURE SURVEY.;

AD- 769 129

UNCLASSIFIED

PAGE

68

AD- 768 855

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 768 855 9/5 13/8

MARTIN MARIETTA AEROSPACE ORLANDO FLA

Manufacturing Methods and Technology Study
Covering Methods for Manufacturing Electronic
Modules. Manufacturing Methods for
Electronic Modules. (U)

DESCRIPTIVE NOTE: Final rept. Mar 72-Jan 73,
JAN 73 561P Pfeil, William H. ; Tantiaglia,
Frederick E. ;
REPT. NO. OR-12332
CONTRACT: DAAM03-71-C-0006
MONITOR: ILS 4-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-768 854 and AD-768

856.

DESCRIPTORS: (•MODULES(ELECTRONICS), MANUFACTURING),
PRINTED CIRCUITS, DESIGN, PLATING, CLEANING, MACHINING,
DRILLING, ETCHING, COATINGS, SOLDERING, ASSEMBLY,
INSTRUCTION MANUALS, AUTOMATION, PRODUCTION CONTROL,
GUIDED MISSILE COMPONENTS (U)

A process and workmanship manual for use in the
manufacture of missile electronic modules was
prepared, using an industry producer-user survey for
state-of-the-art processes, materials, and equipment.
The areas of manufacturing technology covered by
this manual include cleaning, drilling, resist
coating, etching, plating, assembling, soldering, and
conformal coating. The information depicted in each
area of technology covered includes materials,
equipment, procedures, rework, in-production testing,
and production checkpoints. Also, workmanship
bulletins presented as Do's and Don'ts covering
procedures, equipment, and processing materials are
presented for each area of technology.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 768 058

11/6

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching,

(U)

SEP 73 10P Usova,V. V. ;Modestova,V.
N. ;Tomashov,N. D. ;
REPT. NO. FTD-WT-23-152-74
PROJ: FTD-60107, FTD-T74-01-10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of mono. Novyi
Konstruktsionny Material-Titan, n.p., 1972 p170-174,
by Paul J. Reiff.

DESCRIPTORS: (*TITANIUM ALLOYS, *ETCHING), (*HYDROGEN,
TITANIUM ALLOYS), ABSORPTION, HYDROCHLORIC ACID,
SULFURIC ACID, FLUORINE COMPOUNDS, ACIDS, DIFFUSION,
USSR

IDENTIFIERS: TRANSLATIONS, HYDROFLUORIC ACID (U)

IAC ACCESSION NUMBER: MCIC-088663

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The paper discusses etching titanium and alloys of
the Ti-Al system in solutions containing
hydrochloric and sulphuric acid and in solutions
containing hydrofluoric acid. Hydrogen absorption
is established with respect to time. The presence
of aluminum in titanium reduced its hydrogen
absorption. Alloys with additional elements were
found to have less hydrogen absorption than have
binary alloys.

(U)

IAC SUBJECT TERMS: M--(U)VT15, TITANIUM ALLOYS, ALUMINUM
ADDITION, MOLYBDENUM ADDITION, CHROMIUM ADDITION, VT1,
SULFURIC ACID, ETCHING, HYDROFLUORIC ACID, HCL, WATER,
ABSORPTION, CORROSION, HYDROGEN ENVIRONMENT.;

AD- 768 058

UNCLASSIFIED

PAGE

69

AD- 762 767

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 762 767

7/4

11/2

RENSELAER POLYTECHNIC INST TROY N Y MATERIALS DIV

The Rate of Dissolution of Amorphous Silica
in Water. Inaccessibility of Crack Tips in
Glass.

(U)

DESCRIPTIVE NOTE: Technical rept.,
JUN 73 43P Doremus,Robert H. ;Alim-
Marvasti,F. ;Pavelchek,Edward K. ;Doremus,
Robert H. ;
CONTRACT: N00014-67-A-0117-0014
PROJ: NR-032-531

UNCLASSIFIED REPORT

DESCRIPTORS: (*SILICON DIOXIDE, SOLUBILITY), (*GLASS,
CRACKS), WATER, PH FACTOR, TEMPERATURE, ETCHING
IDENTIFIERS: *ALKALI GLASS, SODA LIME GLASS,
*DISSOLVING

(U)

(U)

The report discusses two research projects. In
the first, the rate of dissolution of finely divided
amorphous silica in water was determined by molybdate
analysis of the dissolved monomeric silicic acid.
Effects of pH, temperature, addition of salt, and
stirring were studied. It was concluded from the
results and those of earlier investigators that the
dissolution rate was not controlled by a simple
reaction of silica with water at the silica surface.
The second report discusses the strengthening of
soda-lime glass which results when it is etched with
hydrofluoric acid. It was found much smaller than
expected for etching of the crack tip. Thus little
or no etchant reaches the tip, and perhaps it is
protected from the surroundings by a layer of
hydrated glass. Etching experiments indicate that
the etching acid does penetrate part way down the
crack, giving rounded pits and lines on the glass
surface. (Modified author abstract)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 759 259 20/12 20/2

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

Coordination Chemistry and Kinetics of
Preferential Etching on Surfaces of TiO2
(Rutile).

(U)

DESCRIPTIVE NOTE: Technical rept.,

APR 73 33P Fleischer, Paul D. ; Chase,

Armond B. ;

REPT. NO. TR-0073(9250-C3)-1

CONTRACT: F04701-72-C-0073

MONITOR: SAMSO TR-73-148

UNCLASSIFIED REPORT

DESCRIPTORS: (*SEMICONDUCTORS, ETCHING). (*RUTILE, ETCHING), SINGLE CRYSTALS, TITANIUM COMPOUNDS, DIOXIDES, PHOTOCHEMICAL REACTIONS, POLISHES, CHEMICAL REACTIONS(U)
IDENTIFIERS: TITANIUM(IV) OXIDE (U)

Three different types of etch pits were observed on the (001) surfaces of rutile after etching in a KHSO4 flux at temperatures between 400 and 550C. A chemical reaction scheme is presented, which along with a consideration of the surface chemistry of the various crystallographic faces, is used to explain the kinetics of dissolution of the substrate and hence the observed shapes of the etch pits. Etching of a defect is enhanced in surface regions where silver is photochemically deposited and removed prior to the etching. This phenomenon is explained in terms of a hole (or electron) trapping mechanism at a crystal defect. (Author)

(U)

AD- 759 259

UNCLASSIFIED

PAGE

70

AD- 758 934

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 758 934 20/1 9/1 13/8

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

Ion Beam Etching of Reflective Array
Filters.

(U)

DESCRIPTIVE NOTE: Meeting speech,

72 5P Smith, Henry I. ; Williamson,

Richard C. ; Brogan, William T. ;

REPT. NO. MS-3413

CONTRACT: F19628-73-C-0002

MONITOR: ESD TR-72-370

UNCLASSIFIED REPORT

Availability: Pub. in Proceedings of the
Ultrasonic Symposium (1972), Boston, p4-7 Oct
72.

DESCRIPTORS: (*ACOUSTIC FILTERS, *ETCHING). (*ULTRASONIC RADIATION, ACOUSTIC FILTERS), SURFACES, ION BEAMS, SUBSTRATES, ARGON, LITHIUM COMPOUNDS, NIOBATES, MASKI (U)
IDENTIFIERS: LITHIUM NIOBATES, *ACOUSTIC WAVES,

*SURFACE WAVES, PHOTORESIST TECHNIQUES,
PHOTORESISTORS, SIGNAL PROCESSING, GRATINGS(SPECTRA),
SURFACE WAVES (U)

The use of a neutralized argon ion beam to sputter etch surface wave reflection gratings is described. Linewidths as small as 0.3 micrometer, edge definitions of about 0.1 micrometer, and depths as great as 5 micrometers have been achieved. Scanning electron micrographs are used to show the dependence of groove structure on etching parameters. In some cases, the amplitude of the time domain response of filters was varied by varying the groove depth as a function of position in the grating. This was done by placing a fixed aperture in the beam and programming the rate at which a substrate was pulled past it. This weighting technique and the resulting performance of several types of filters is described. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 758 762 9/1 13/8

AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD MASS

Fabrication of Elastic Surface Devices by Chemical Etching. (U)

DESCRIPTIVE NOTE: Physical sciences research papers, DEC 72 24P Kearns, William J. ; Silva, Jose H. ;

REPT. NO. AFRL-72-0731, AFRL-PSRP-518

PROJ: AF-5573

TASK: 557307

UNCLASSIFIED REPORT

DESCRIPTORS: (*TRANSDUCERS, MANUFACTURING), (*DELAY LINES, MANUFACTURING), PHOTOENGRAVING, ETCHING, LITHOGRAPHY, MICROPHOTOGRAPHY (U)

IDENTIFIERS: ACOUSTICS, MICROWAVES, ACOUSTIC WAVES, SURFACE WAVES, ACOUSTIC DELAY LINES, INTERDIGITAL TRANSDUCERS, SURFACE WAVES (U)

The fabrication of elastic surface-wave encoders and decoders for use in secure, anti-jam command, control, and communications systems is described. The processes consist of substrate cleaning, vacuum evaporation of thin aluminum films, photolithography, and chemical etching. Using these techniques, surface-wave interdigital transducer gratings have been fabricated with linewidths as small as 1.5 micrometer. A discussion of the factors affecting the yield of these devices is included. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 757 878 9/1 13/8

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

RF Sputter Etching of Al, SiO₂, and Photoresist. (U)

DESCRIPTIVE NOTE: Master's thesis, DEC 72 129P Wilkinson, Kenneth D. ; REPT. NO. GE/EE/73-23

UNCLASSIFIED REPORT

DESCRIPTORS: (*SILICON DIOXIDE, ETCHING), (*ALUMINUM, ETCHING), (*SEMICONDUCTOR DIODES, MANUFACTURING), PHOTOENGRAVING, SPUTTERING, ION BOMBARDMENT, FEASIBILITY STUDIES, THESES (U)

IDENTIFIERS: ARGON, PLASMAS(PHYSICS), PHOTORESIST TECHNIQUES, SCHOTTKY BARRIER DEVICES, SEMICONDUCTOR DIODES (U)

The procedures followed to determine the feasibility of using an rf-generated argon plasma to sputter etch windows through 8000 Å of SiO₂ are described in this thesis. The sputtered windows will be used to fabricate Schottky diodes and interconnections for multilayer devices. The rf sputter etch rate for Al, SiO₂ and Waycoat photoresist was investigated at various self-bias voltages and longitudinal magnetic fields. All experiments were carried out at 27.12 MHz and 10 mTorr argon pressure. (Author Modified Abstract)

(U)

AD- 758 762

UNCLASSIFIED

PAGE

71

AD- 757 878

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 756 250 20/12 9/1

INTERNATIONAL BUSINESS MACHINES CORP HOPWELL JUNCTION N Y
EAST FISHKILL LABDamage Profiles in Silicon and their Impact
on Device Reliability.

(U)

DESCRIPTIVE NOTE: Technical rept. 6 Jun-30 Dec 72,
JAN 73 31P Schwuttke, Guenter H. ;
REPT. NO. TR-1
CONTRACT: DAHC15-72-C-0274, ARPA Order-2196

UNCLASSIFIED REPORT

DESCRIPTORS: (*SILICON, DEFECTS(MATERIALS)),
(*CAPACITORS, RELIABILITY(ELECTRONICS)), SEMICONDUCTOR
DEVICES, ELECTRICAL PROPERTIES, TRANSIENTS, ETCHING,
ELECTRON MICROSCOPY, THIN FILM STORAGE DEVICES (U)
IDENTIFIERS: METAL OXIDE SEMICONDUCTORS, TRANSMISSION
ELECTRON MICROSCOPY (U)

Standard silicon wafers are shown to frequently
contain residual mechanical saw damage in the
surface. The damage is identified through
transmission electron microscopy (TEM) as
microspalls of the silicon lattice. Microspalls
are not detectable by standard inspection, screening
or etching techniques. Microspall dimensions range
from 0.1 to 10 micrometer. The density of the
spalls can vary from zero to 10 to the 6th power/sq
cm or even higher. Microspalls are shown to cause
loss of storage time in MOS capacitors.
(Author) (U)

AD- 756 250

UNCLASSIFIED

PAGE

72

AD- 754 762

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 754 762 14/2

MONSANTO RESEARCH CORP ST LOUIS MO

An Experimental Technique for Monitoring
Dynamic Cracks,

(U)

OCT 72 21P Lavengood, R. E. ; Peretz, D.
; Brisse, F. L. ; Wu, E. M. ;
REPT. NO. HPC-70-126
CONTRACT: N00014-67-C-0218, ARPA Order-876
PROJ: NR-356-484

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Monsanto/Washington
Univ., ONR/ARPA Association project development of
High Performance Composites.
DESCRIPTORS: (*MONITORS, *CRACK PROPAGATION), CRACKS,
MEASURING INSTRUMENTS, METAL FILMS, COPPER, ETCHING (U)

A technique is presented which, by means of plating
and etching processes, permits the creation of a wide
variety of crack propagation gages. High precision
gages of arbitrary size and shape are easily
prepared. Specific gage configuration are shown for
center notch, edge notch and cleavage type specimens.
Optimum gage design is discussed and typical
readout circuits are shown. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 753 918 20/12 20/5

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

Interaction of Semiconductor Materials with
Laser Radiation at 10.6 Micrometers. (U)

DESCRIPTIVE NOTE: Research and development technical

rept.:
DEC 72 41P Bates, R. D., Jr.; Cook,
C. F., Jr.; Shapiro, J. R.; Rohde, R. S.
; Mahoney, J. P. ;

REPT. NO. ECOM-4059

PROJ. DA-1-T-061102-B-11-A

TASK: 1-T-061102-B-11-A-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*SEMICONDUCTORS, DAMAGE), (*SILICON,
DAMAGE), INFRARED LASERS, GAS LASERS, COHERENT
RADIATION, ETCHING, ELECTRON MICROSCOPY, THERMAL
STABILITY, (U) THERMAL STABILITY (U)
IDENTIFIERS: *LASER BEAMS, CARBON DIOXIDE LASERS,
THERMAL DEGRADATION (U)

IAC ACCESSION NUMBER: MCIC-084992 GC-730337
IAC DOCUMENT TYPE: MCIC -HARD COPY-- GACIAC -HARD
COPY--

Initial experiments characterizing the nature and mechanisms of electronic materials failure when irradiated by CW 10.6 micrometer CO2 laser light have been performed. The selective application of such techniques as optical microscopy, scanning electron microscopy, electron microprobe analysis, x-ray crystallography, spin resonance spectroscopy, and infrared spectroscopy provides a specialized facility for the detailed characterization of the nature of the damage state and the paths which lead to this state. Preliminary results on the changes induced in silicon samples show five distinct phases: (1) thermal etching; (2) stress relief through formation of slip traces and cracks; (3) peak formation; (4) melting; and (5) abrupt surface modification. These detailed results are unique in the study of 10.6 micrometer laser irradiation of semiconductor materials. The nature of these mechanisms and the possible means of component immunization are discussed.

(U)

AD- 753 918

UNCLASSIFIED

PAGE

73

AD- 750 517

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 750 517 11/3 13/9

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Plasma Babbitt Surfacing of the Steel Base
of Bearings. (U)

AUG 72 8P Bruk, M. V. ; Khmelevskaya,

V. B. ;

REPT. NO. FTD-HC-23-0882-72

PROJ: AF-7343

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of
Institut Vodnogo Transmitta, Leningrad. Trudy
(USSR) n126 p49-52 1c/1.

DESCRIPTORS: (*METAL COATINGS, *ELECTRODEPOSITION),
(*BEARINGS, METAL COATINGS), CLEANING, ETCHING, ION
BOMBARDMENT, ALLOYS, FINISHES, USSR
IDENTIFIERS: *ARC SPRAYING, BEARING ALLOYS, *PLASMA
SPRAYING, TRANSLATIONS (U)
(U)

The authors suggest the use of an alternating current plasma arc for preparing a surface just before pouring (in this case, the surface is cleaned by the so called ion etching process) and for facing the bearing's framework with babbitt. This process eliminates the laborious operation of cleaning the surface. The quality of the babbitt deposited by the plasma arc and its adhesion strength are not inferior to those characteristics obtained by the usual method. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AJ- 748 525

13/8

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Pretreatment of Titanium for Subsequent Electrodeposition of Metal.

(U)

MAY 72 21P Hensel, V. G. ;
REPT. NO. FTD-MC-23-266-72
PROJ: AF-7343

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of Eigenschaften und Anwendung Hochschmelzender und Reaktiver Metalle, Dresden, 15-18 Feb 67. Paper (Properties and Use of High Melting and Reactive Metals, Dresden, 15-18 Feb 67. Paper), Freiberg, n.d.

DESCRIPTORS: (*ELECTROPLATING, *TITANIUM ALLOYS), HYDRIDES, FILMS, METAL COATINGS, ETCHING, ZIRCONIUM ALLOYS, TANTALUM ALLOYS, COPPER, NICKEL, GOLD, PLATINUM, EAST GERMANY (U)
IDENTIFIERS: TRANSLATIONS (U)

IAC ACCESSION NUMBER: MCIC-085085

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Surface oxidation can be prevented and the adherence of Cu, Ni, Au, and Pt to Ti can be improved by forming a thin hydride film on a Ti. Hydrides can be formed by chemical etching in 0.5M HF or cathodic polarization in 0.5M HF containing 1 to 4 NH4F followed by polarization in 0.1M H2SO4. The hydride film has no effect on the mechanical properties and the sheets can be rolled less than or equal to 25 percent. The method can be used for improving the adherence of metals to Zr, Ta, and Nb. (Author)

(U)

IAC SUBJECT TERMS: M--(U)Unalloyed Titanium, Titanium Alloys, Platinum, Copper, Unalloyed Nickel, Gold, Zirconium, Tantalum, Columbium, Coatings, Electroplating, Electrodeposition, Etching, Cleaning, Oxidation, Titanium Hydride.;

AD- 748 525

UNCLASSIFIED

PAGE

74

AD- 748 422

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 748 422 6/2 11/3

MISSOURI UNIV COLUMBIA SPACE SCIENCES RESEARCH CENTER

Chronic Oxygen Electrodes - A Feasibility Study.

(U)

DESCRIPTIVE NOTE: Final rept.,
JUL 72 49p Hahn, Allen W. ; Barr, Ronald E. ; Mayhan, Kenneth G. ;
CONTRACT: DADA17-71-C-1104

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRODES, *PLASTIC COATINGS), OXYGEN, MEDICAL EQUIPMENT, NITROCELLULOSE, LABORATORY EQUIPMENT, CLEANING, TEST METHODS, POLAROGRAPHIC ANALYSIS, ETCHING, IN VIVO ANALYSIS, IN VITRO ANALYSIS, WIRE, FEASIBILITY STUDIES (U)
IDENTIFIERS: OXYGEN ELECTRODES, *BIODINSTRUMENTATION, *PLASMA SPRAYING, POLYPROPYLENE (U)

The feasibility of obtaining stable oxygen electrodes by coating with a plasma catalyzed polymer film was studied. These electrodes are to be used for chronic in vivo measurement of tissue oxygen tension. The application of the film was tested on both disc-shaped and needle-type platinum oxygen reducing polarographic electrodes in simulated biological media. It was shown that a uniform polymer film of 1-2 micrometers could be applied to the sensing surface. This could be done, however, only if the surface was cleaned by hydrofluoric acid etching. Results of testing coated electrodes showed a significant reduction in noise output and increased electrode stability. From the preliminary feasibility study, it was concluded that plasma deposited polymer films as an electrode coating is a practical technique. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 747 019 11/3 11/2

CALIFORNIA INST OF TECH PASADENA CALIF DEPT OF ELECTRICAL
ENGINEERINGAnalysis of Aluminum Oxide Films on
Silicon, (U)

MAY 72 56P Kamoshida,Mototaka ;Mayer,
James W. ;Mitchell,Ian V. ;
REPT. NO. Scientific-2
CONTRACT: F19628-71-C-0056
PROJ: AF-5638
TASK: 563802
MONITOR: AFCL 72-0319

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Nippon
Electric Co., Kawasaki (Japan).

DESCRIPTORS: (*SILICON, COATINGS), (*ALUMINA,
DEPOSITION). (*CERAMIC COATINGS, ALUMINA), HYDROLYSIS,
ALUMINUM COMPOUNDS, CHLORIDES, ETCHING, HEAT TREATMENT,
CHEMICAL PROPERTIES, OXIDATION, SILICON COMPOUNDS, (U)
NITRIDES, DIELECTRIC FILMS
IDENTIFIERS: ALUMINUM COMPOUNDS, CHLORIDES, ALUMINUM
CHLORIDES, *ALUMINUM OXIDE FILMS, ANODIC COATINGS,
*CHEMICALS, *VAPOR DEPOSITION, SILICON NITRIDES, VAPOR
DEPOSITION (U)

Aluminum oxide exhibits novel and useful properties
as a passivating layer on silicon surfaces. The
study was concerned with the properties of
hydrolytically grown aluminum oxide films on silicon.
The study covered the influence of deposition
temperature, of subsequent heat treatment and of
anodization. The principal tool of measurement was
MeV He(+) ion backscattering technique; in
addition etch rates were measured and electron
diffraction patterns were taken. Aluminum oxide
films deposited onto silicon substrates by hydrolysis
of AlCl₃ show marked differences in etch rates,
electron diffraction patterns and chlorine content
between films grown below 700C and above 800C.
However, both film types are stoichiometric.
(Author) (U)

AD- 747 019

UNCLASSIFIED

PAGE

75

AD- 742 436

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 742 436 13/8

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERINGA Study of RF Sputter Etching in an Argon
Plasma Using Silicon as a Target. (U)

DESCRIPTIVE NOTE: Master's thesis,
MAR 72 127P Duke,William G. ;
REPT. NO. GE/EE/72-10

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPUTTERING, FEASIBILITY STUDIES),
(*SILICON, *ETCHING), (*ALUMINUM, ETCHING), THIN FILM
STORAGE DEVICES, SEMICONDUCTOR DEVICES, INTEGRATED
CIRCUITS, MANUFACTURING, PLASMA MEDIUM, ARGON,
THESES (U)
IDENTIFIERS: ARGON, PLASMAS(PHYSICS), PROCESS CONTROL,
*RADIOFREQUENCY SPUTTERING (U)

Highly reproducible etch rates were achieved by
sputter etching on silicon and aluminum targets in an
RF generated argon plasma. The target materials
were subjected to a number of different etching
conditions to evaluate the dependence of etch rate
upon electrode separation, argon pressure, self-
biasing voltage, and a static magnetic field.
Formulas for etch rate dependence upon the self-
bias voltage and magnetic field were derived from
theoretical considerations and experimental
observations. Plasma contamination and masking
technique were critical factors. With the proper
selection of etching conditions, etch rates were
reproduced with an error less than 5%.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 742 198

11/6

DEFENCE STANDARDS LABS ALEXANDRIA (AUSTRALIA)

Measurement of Deformation in Alpha Brass by
Means of an Electrolytic Thiosulfate Etch.

(U)

O. ;
APR 71 9P Manion, S. A. ; Mulhearn, T.

UNCLASSIFIED REPORT

Availability: Pub. in Metallography, v4 p551-559
1971. Summaries in French and German.DESCRIPTORS: (*BRASS, *DEFORMATION). (*ETCHING, BRASS).
THIOSULFATES, ELECTROLYTES, METALLOGRAPHY, AUSTRALIA (U)An examination has been made of the factors
controlling the sensitivity for detection of
deformation in 70:30 brass by the electrolytic
sodium thiosulfate etch. It has been shown that the
most important factors are cleanliness of the metal
surface and the composition of the electrolyte.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 740 315

11/5

NAVAL ORDNANCE LAB WHITE OAK MD

Carbon Fiber Microstructure,

(U)

MAR 72 57P Barnett, F. Robert ; Norr,
Marriner K. ;
REPT. NO. NOLTR-72-32
PROJ: A32-520/292/70WFS1544201

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBON FIBERS, MICROSTRUCTURE),
(*ELECTRON MICROSCOPY, CARBON FIBERS). ETCHING, PLASMA
JETS, GRAPHITE, MODULUS OF ELASTICITY, SURFACES
IDENTIFIERS: ELECTRON MICROSCOPY, ELECTRONIC
SCANNERS

(U)

IAC ACCESSION NUMBER: MCIC-083859 PL-017R31

IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--Electron and optical microscopy, X-ray, and other
characterization methods have been utilized
extensively in the development of models describing
the morphology of carbon fibers. In a new approach
which complements these techniques, carbon fibers
have been plasma etched, making their salient
structural characteristics highly visible when viewed
in a scanning electron microscope. Major
differences are seen in the etch patterns, and these
can be correlated with the precursor fiber and with
the carbon fiber moduli. These patterns give
evidence of the crystalline order in the fiber cross
section and of gross structural variations, such as
flaws. (Author-PL)

(U)

IAC SUBJECT TERMS: P--(U)Morphology-Carbon fiber,
Electron microscopy-Carbon fiber, Optical microscopy-
Carbon fiber, X ray diffraction-Carbon fiber,
Plasma etching-Carbon fiber, Microstructure-Carbon
fiber, ZZ Unlimited; M--(U)CARBON, FILAMENTS,
MICROSTRUCTURE, MORPHOLOGY, SEM, GRAPHITE, ETCHING;

AD- 742 198

UNCLASSIFIED

PAGE

76

AD- 740 315

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 738 682 7/4 13/8

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Certain Chemical Properties of Indium Phosphide. (U)

OCT 71 11P Ugai, Ya. A. ;Gordin, V.
L. ;Gukov, O. Ya. ;Markina, G. I. ;
REPT. NO. FTD-HT-23-1248-71
PROJ: AF-7343

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of mono. Khimiya
Fosfora i Poluprovodnikovymi Sloistvami (The
Chemistry of Phosphides with Semiconductor
Properties), n.p., 1970 p46-51, by D. Koolbeck.
DESCRIPTORS: (*INDIUM COMPOUNDS, *ETCHING),
(*PHOSPHIDES, ETCHING), ACIDS, SEMICONDUCTORS, SINGLE
CRYSTALS, PHOSPHINE, HYDROLYSIS, HYDROXIDES, USSR (U)
IDENTIFIERS: *INDIUM PHOSPHIDES, TRANSLATIONS (U)

The rates of dissolution of indium phosphide in
certain acids at various temperatures were
determined. Etching agents are proposed for
chemical polishing, finding dislocation pits, and
also for detecting single-crystal nature of ingots of
indium phosphide without using microstructural
investigations. During abrasive treatment of indium
phosphide using water, it is found that the source of
liberation of phosphine is not only the hydrolysis
reaction, but also includes processes leading to the
reaction of InP with the products of its
oxidation at points of local heating. (Author) (U)

AD- 738 682

UNCLASSIFIED

PAGE

77

AD- 737 946

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 737 946 20/2

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

Morphology of Thermally Etched Basal
Surfaces of Cadmium Selenide. (U)

DESCRIPTIVE NOTE: Technical rept.,
SEP 71 22P Munir, Z. A. ;Seacrist, L.
S. ;Hirth, J. P. ;
REPT. NO. OSURF-2966-TR-4
CONTRACT: N00014-67-A-0232-0005
PROJ: NR-036-047, OSURF-2366

UNCLASSIFIED REPORT

Availability: Pub. in Surface Science, v28 n2
p357-372 Dec 71.
SUPPLEMENTARY NOTE: Prepared in cooperation with San
Jose State Coll., Calif. Dept. of Materials
Science.
DESCRIPTORS: (*CADMIUM SELENIDES, *ETCHED CRYSTALS),
SINGLE CRYSTALS, ETCHING, SURFACE PROPERTIES, ELECTRON
MICROSCOPY (U)

Sublimated (0001) and (000(-1)) surfaces
of CdSe single crystals were studied by scanning
electron microscopy. The observations, together
with kinetic rate measurements, are shown to be
consistent with the terrace-ledge-kink model of
sublimation. Other proposed mechanisms of
sublimation of II-VI compounds are discussed.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 736 758

9/5

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

Mode Control and Related Studies of VHF
Quartz Filter Crystals.

MAR 71 9P Lukaszek, Theodore J. ;

UNCLASSIFIED REPORT

Availability: Pub. in IEEE Transactions on
Sonics and Ultrasonics. v50i8 n4 p238-246 Oct
71.

SUPPLEMENTARY NOTE: Revision of report dated 26 May 70.
Supersedes report dated Nov 70. AD-719 175.

DESCRIPTORS: (*CRYSTAL FILTERS, VERY HIGH FREQUENCY), (U)
(*QUARTZ RESONATORS, MANUFACTURING), ETCHING

The purpose of this paper, is to present new
information which alleviates previously encountered
restrictions and permits fabrication of filter
crystals to frequencies as high as 200 MHz. This
has been made possible on the basis of first, a
recently assembled crystal plating and monitoring
system and secondly, the introduction of a new
processing method employing ion-etch techniques.
(Author)

(U)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 727 620

13/8

GRUMMAN AEROSPACE CORP BETHPAGE N Y

Advanced Chemical Milling Processes.

DESCRIPTIVE NOTE: Final technical rept. 1 Jul 69-31
Dec 70.

MAR 71 213P Staebler, Christian J. , Jr;
CONTRACT: F33615-69-C-1840

PROJ: AF-705-9

MONITOR: AFML TR-71-44

UNCLASSIFIED REPORT

DESCRIPTORS: (*CHEMICAL MILLING, *TITANIUM ALLOYS),
AUTOMATION, INORGANIC ACIDS, MASKING, ETCHING, HEAT
TREATMENT, MECHANICAL WORKING, AIR POLLUTION
IDENTIFIERS: HYDROFLUORIC ACID

IAC ACCESSION NUMBER: MCIC-081104

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The program objective was to improve the
capability, reliability, and cost effectiveness of
chemical milling when applied to selected aerospace
structural materials. A completely automated,
centrifugal regeneration system for titanium
hydrofluoric acid etchant was designed, fabricated,
and tested. This system automatically analyzes the
etchant, adds fresh acid, determines the titanium
concentration, and activates a centrifuge which removes
precipitated titanium and reclaims the etchant. A
new, styrene-butadiene maskant was developed that
gives excellent line definition on titanium
substrates and that can be manufactured for about
one-half the cost of commercially available maskants.
The feasibility of using a laser-drilled, high-
energy water jet to scribe chem-milling maskants was
established. Optimum chem-milling/forming
methodizing sequences were established that minimize
distortion of titanium alloy detail parts. Sampling
and analytical techniques were established for the
major pollutants emitted by chem-milling operations.
Air pollution control agencies and equipment
manufacturers were surveyed. (Author)

(U)

IAC SUBJECT TERMS: M--(U)DIMENSIONAL STABILITY, HEAT
TREATING, ULTIMATE TENSILE STRENGTH, YIELD STRENGTH,
CONTOUR, ROLL FORMING, BRAKE FORMING, AIR POLLUTION,
PHOTORESIST COATINGS, TI-8AL-1MO-1V, CHEMICAL MILLING,
ETCHANTS, MASKANT, TI-6AL-4V, HYDROGEN CONTENT, TI-6AL-6V-

AD- 736 758

UNCLASSIFIED

PAGE

78

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

11/2

ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN MASS

Transission Microscopy of Ion-Bombardment Thinned Boron Carbide. (U)

Q. ; NOV 70 10P Katz, R. Nathan ; King, Abram

UNCLASSIFIED REPORT

Availability: Pub. in Transactions of the Metallurgical Society of AIME, V245 p2591-2592 Dec 69. No copies furnished.

DESCRIPTORS: (*ZINC ALLOYS, GRAIN BOUNDARIES), (*GRAIN BOUNDARIES, ETCHING), HARDENING, CANADA (U)

The note reports on observations of different grain boundary etching phenomena in high purity zinc alloys. These phenomena appear to depend on whether a $K < 1$ or $K > 1$ solute is present. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 715 857 11/2

ARMY MATERIALS AND MECHANICS RESEARCH CENTER WATERTOWN MASS

Transission Microscopy of Ion-Bombardment Thinned Boron Carbide. (U)

DESCRIPTIVE NOTE: Technical rept., NOV 70 10P Katz, R. Nathan ; King, Abram

Q. ; NOV 70 10P Katz, R. Nathan ; King, Abram

REPT. NO. AMMRC-TR-70-31

PROJ: DA-1-T-062105-A-330

UNCLASSIFIED REPORT

DESCRIPTORS: (*CARBIDES, *ELECTRON MICROSCOPY), (*ETCHING, CARBIDES), BORON COMPOUNDS, DISLOCATIONS, ION BOMBARDMENT, MICROSTRUCTURE (U) IDENTIFIERS: *BORON CARBIDES (U)

The use of the ion-bombardment etching technique to thin boron carbide ceramics for transmitted light optical and transmission electron microscopy is demonstrated. The results of the transmission electron microscopy provide the first direct evidence of the existence of dislocations in boron carbide. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 713 554 20/2

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J INST FOR
EXPLORATORY RESEARCHDIRECT SOLUTION OF COMPLEX CRYSTAL STRUCTURES BY
ELECTRON MICROSCOPY, (U)70 14P Kohn, Jack A. ; Cook, Charles
F. , Jr.; Eckart, Donald W. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*ETCHED CRYSTALS, *ELECTRON MICROSCOPY),
(*FERRITES, *CRYSTAL STRUCTURE), ETCHING, TEST METHODS,
MICROCLAVE EQUIPMENT (U)

Hexagonal ferrites, complex ferrimagnetic oxides having exploitable microwave/millimeter-wave properties, form structures too large and complex for solution by classical diffraction techniques. Determination of crystal structures, however, is essential for a structural understanding of properties and for attaining the ultimate objective of tailor-made materials in the frequency range. The procedure described herein uses high-resolution replica electron microscopy to 'read out' structural stacking sequences 'encoded' onto hexagonal ferrite crystal surfaces by hydrochloric acid, particularly, nitric acid etching. The method readily permits the direct solution of such crystal structures, including materials with larger unit cells than in any known inorganic substances. (Author) (U)

AD- 713 554

UNCLASSIFIED

PAGE

90

AD- 708 756

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 708 756 11/6 13/8

ILLINOIS UNIV URBANA DEPT OF METALLURGY AND MINING
ENGINEERING

SPARK EROSION CUTTING OF GERMANIUM. (U)

DESCRIPTIVE NOTE: Technical rept.,
JUL 70 10P Walsen, R. P. ; Haworth, W.
L. ; Birnbaum, H. K. ;
CONTRACT: N00014-67-A-0305-0016

UNCLASSIFIED REPORT

DESCRIPTORS: (*GERMANIUM, *SPARK MACHINING),
DISLOCATIONS, DEFECTS(MATERIALS), ETCHING, SURFACE
ROUGHNESS, MANUFACTURING, CRYSTAL DEFECTS (U)
IDENTIFIERS: *SPARK EROSION MACHINING (U)

The conditions for machining germanium by the spark erosion technique are established. The effects of this machining on the structure of the crystal are studied by etch pitting. Under proper conditions minimal damage to the crystal results. This technique appears to have the advantages of speed, minimal surface damage and flexibility in the shape of the cut. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 707 400 11/6

WATERVLIET ARSENAL N Y

METALLOGRAPHIC TECHNIQUE FOR THE DEVELOPMENT OF
MICROSTRUCTURAL CONSTITUENTS IN GUN STEEL. (U)

DESCRIPTIVE NOTE: Technical rept.,

MAY 70 19P Brassard, Theresa V. ; Nolan,

Charles J. ;

REPT. NO. WVT-7029

PROJ: DA-1-C-024401-A-110, DA-1-T-062105-A-328

UNCLASSIFIED REPORT

DESCRIPTORS: (*STEEL; MICROSTRUCTURE), ETCHING, GRAIN
BOUNDARIES, GUN BARRELS, METALLOGRAPHY (U)

IAC ACCESSION NUMBER: MCIC-078137

IAC DOCUMENT TYPE: MCIC -HARD COPY--

An investigation was undertaken to develop etching procedures to clearly distinguish certain metallographic features of large forgings. The investigation demonstrates that (1) good microstructure resolution was obtained in untempered martensite using a 2% nital etchant, (2) either 25% sodium bisulfite in water or 4% picral plus hydrochloric acid yielded the best results for both tempered martensite and a duplex structure of tempered martensite and tempered lower bainite, and (3) an aqueous solution of 1% picric acid and 7% sodium tridecylbenzene sulfonate proved highly satisfactory in revealing both the prior austenitic grain boundaries and the macrostructure. (Author) (U)

IAC SUBJECT TERMS: M--(U)ETCHING, FORGINGS,
MICROSTRUCTURE, MARTENSITE, BAINITE, AUSTENITE, GRAIN
BOUNDARIES, METALLOGRAPHY, ENGINEERING STEEL, GUNS.;

AD- 707 400

UNCLASSIFIED

PAGE

81

AD- 699 991

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 699 991 11/2 13/8

SASKATCHEWAN UNIV SASKATOON COLL OF ENGINEERING

AN ELECTRON-MICROSCOPICAL EXAMINATION OF
GRAYSON'S MICRO-RULINGS. (U)

69 7P Booth, A. D. ;

UNCLASSIFIED REPORT

Availability: Pub. in Proceedings of the Royal
Microscopical Society, v4 pt3 p109-114 Jul 69. No
copies furnished.

DESCRIPTORS: (*GLASS, ETCHING), (*ETCHING, ELECTRON
MICROSCOPY), FILMS, CUTTING TOOLS, VISUAL INSPECTION,
TEST METHODS, CANADA (U)

Turner and Bradbury (1966) have performed a
valuable service, both to practising microscopists
and to students of microscope history, by producing
their detailed paper on Nobelet's twenty band test
plate, and also for their earlier work (Bradbury
and Turner, 1963) on his ten band plate. The
paper by Turner and Bradbury (1966) aroused a
determination to dismantle the major portion of the
Grayson ruling and to subject it to examination
with the EM6G electron microscope which was
installed in the College of Engineering in
Saskatchewan in 1967. This examination has now
been carried out, and it is the purpose of the
present paper to report the results. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 699 723 11/6 14/2

SASKATCHEWAN UNIV SASKATOON COLL OF ENGINEERING

ON THE USE OF COLOUR ETCHING TECHNIQUES FOR
STAINLESS STEELS (Ueber die Anwendung von
Farbätzungen bei rostfreien Stählen).

E. ; 69 12P Le May, Iain ; White, William

MONITOR: DRB R. J. McInt-3032

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Availability: Pub. in
Praktische Metallographie, v4 n1 p53-63 1969. No
copies furnished.
DESCRIPTORS: (*STAINLESS STEEL, PHASE STUDIES).
(*ETCHING, STAINLESS STEEL), AUSTENITE, VISUAL
INSPECTION, CANADA

It was shown that with careful control of etching
procedures, colour etchants can be successfully
employed to distinguish between ferrite, sigma phase
and carbides in austenitic steels. Detailed
procedures to achieve this are outlined.
(Author)

(U)

AD- 699 723

UNCLASSIFIED

PAGE

82

AD- 697 569

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 697 569 20/12 7/4

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

METHODS OF SiC SURFACE AND p-n JUNCTION
TREATMENT,

(U)

MAY 69 10P Afanaseva, G. M. ; Ryzhikov,
I. V. ; Kmita, T. G. ; Pavlichenko, V. I. ;
REPT. NO. FTD-MT-24-21-69
PROJ: FTD-7230278

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of mono.
Vsesoyuznaya Konferentsiya Pokarbidu Kremniya,
Kiev. 1964. Karbid F. emiya; Trudy (All-Union
Conference on Silicon, Kiev, 1964. Silicon
Carbide) papers, n.p., 1964 p265-267.
DESCRIPTORS: (*SEMICONDUCTORS, SURFACE PROPERTIES).
(*SILICON CARBIDES, ETCHING), ELECTRON DIFFRACTION,
ETCHED CRYSTALS, INTERFACES, USSR
IDENTIFIERS: SEMICONDUCTOR JUNCTIONS,
TRANSLATIONS

(U)

(U)

Etchants for alpha SiC crystals and rectifying
junctions were examined. The optimum dissolution
rate and the best surface quality were obtained with
4KNO3 plus 1KOH; 2KNO3 plus 1K2 SO4 plus
1KOH; 1KNO3 plus 1NA2 CO3 plus 1KOH.
Etching was conducted in a nickel crucible in air
at a temperature of 700-750 degrees C. The
quality of the etched surface was checked on an
electron diffraction camera by reflective
photography. Etching gave optimum results in the
melted mixture 5NA2 O2 plus 7NaCl plus
5KOH. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 696 910 20/12

NATIONAL BUREAU OF STANDARDS WASHINGTON D C INST FOR
MATERIALS RESEARCH
FRACTURE OF SAPPHIRE. (U)

MAR 69 10P Wiederhorn, S. M. ;
PROJ: DA-2-O-061102-8-32-D
MONITOR: AROD 5724:6-MC

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of the American
Ceramic Society, v52 n9 p485-491, 21 Sep 69.
SUPPLEMENTARY NOTE: Revision of report dated 13 Jan 69.
Presented at the Annual Meeting of the American
Ceramic Society (70th), Chicago, Ill., 22 Apr
68.

DESCRIPTORS: (*SAPPHIRE, FRACTURE(MECHANICS)), CRACK
PROPAGATION, DISLOCATIONS, ETCHING, SURFACE PROPERTIES(U)
IDENTIFIERS: PLASTIC DEFORMATION (U)

The fracture of sapphire was studied using the
double-cantilever-cleavage technique. Fracture
surface energies were 7.3 and 6.0 J/m squared for
the (10-10) and (-1012) type planes,
respectively. The failure of sapphire to fracture
along the basal plane was attributed to the fact that
these planes lack electrostatic charge neutrality.
The possibility of fracture-induced dislocation
motion in sapphire at room temperature was
investigated using etch-pit techniques. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 696 861 20/2 20/12

AIR FORCE AVIONICS LAB WRIGHT-PATTERSON AFB OHIO
EFFECT OF KILOVOLT ELECTRONS ON THE ETCH RATE OF
Al2O3 AND Ta2O5. (U)

JAN 69 4P Hill, B. H. ;
REPT. NO. AFAL-TR-69-140

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of the
Electrochemical Society, v116 n5 p668-669 May 69.
SUPPLEMENTARY NOTE: Revision of report dated 8 Oct
68.

DESCRIPTORS: (*ALUMINA, *ETCHING), (*TANTALUM COMPOUNDS,
ETCHING), (*ELECTRON IRRADIATION, *CRYSTALS), FILMS,
ETCHED CRYSTALS (U)
IDENTIFIERS: *ALUMINA, BEER(BOMBARDED ENHANCED ETCH
RATE), BEER(BOMBARDMENT ENHANCED ETCH RATE),
BOMBARDMENT ENHANCED ETCH RATE, BOMBARDED ENHANCED
ETCH RATE, *TANTALUM(V) OXIDE (U)

It has been established recently that the chemical
etch rate of thermally grown SiO2 is enhanced
(3 times) when the sample is bombarded with
energetic electrons. This process is called the
bombarded enhanced etch rate (BEER) effect and is a
function of electron dose. In order to determine
whether the BEER effect would open discretionary
windows in other dielectric materials, electron
irradiation studies were conducted on films of
Al2O3 and Ta2O5. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 694 836 11/2 20/11

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

METHOD FOR INCREASING THE MECHANICAL STRENGTH OF GLASS. (U)

APR 69 5P Kuznetsov, A. Ya. ; Orlova,
L. A. ;
REPT. NO. FTD-HT-23-1492-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Patent (USSR) 201
614 10, 12 Aug 66, by D. Koolbeck.
DESCRIPTORS: (*OPTICAL GLASS, MECHANICAL PROPERTIES),
HARDNESS, ETCHING, CLEANING, SURFACE PROPERTIES, ETHERS,
ETHANOLS, CLEANING COMPOUNDS, AMMONIUM COMPOUNDS, (U)
HYDROXIDES, CONCENTRATION(CHEMISTRY), USSR (U)
IDENTIFIERS: AMMONIUM HYDROXIDE, TRANSLATIONS

The invention involves a method for increasing the
mechanical strength of glass by treating the clean
surface with an etching solution. The procedure is
designed for optical glass and involves cleaning the
surface with a mixture of petroleum ether and
hydrolytic ethyl alcohol, followed by etching at room
temperature in a solution of ammonium hydroxide,
preferably 6.7-13.4 N, for 50-180 minutes.
(Author) (U)

AD- 694 836

UNCLASSIFIED

PAGE

84

AD- 694 802

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 694 802 18/8 20/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS. (U)

APR 69 6P Kalnin, D. O. ; Shvarts, K.
K. ; Feldmane, E. E. ;
REPT. NO. FTD-HT-23-1283-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Akademiya Nauk
Latvitskoi SSR, Riga. Izvestiya. Seriya
Fizicheskikh i Tekhnicheskikh Nauk, no p101-102 1966,
by D. Koolbeck.
DESCRIPTORS: (*LITHIUM FLUORIDES, *DAMAGE),
(*DISLOCATIONS, DENSITY), THERMAL NEUTRONS, ETCHING,
USSR, (U)USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

The effect of the dislocation density on the
expansion of the volume of LiF during irradiation
in a reactor was investigated. The LiF
crystals were grown in a vacuum and etched in an
aqueous solution. The dislocations have no
significant effect on the radiation expansion. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 693 812 9/5 13/8

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

METHOD FOR FABRICATING HIGH FREQUENCY SURFACE WAVE
TRANSDUCERS. (U)

DESCRIPTIVE NOTE: Journal article,
JAN 69 3p Smith, Henry I. ;
REPT. NO. JA-3406
CONTRACT: AF 19(600)-5167
MONITOR: ESD TR-69-231

UNCLASSIFIED REPORT

Availability: Pub. in Review of Scientific
Instruments, v40 n5 p729-730 May 1963.
SUPPLEMENTARY NOTE: Revision of report dated 23 Dec
68.

DESCRIPTORS: (*TRANSDUCERS, MANUFACTURING), MECHANICAL
WAVES, PIEZOELECTRIC CRYSTALS, SUBSTRATES, ELECTRODES, (U)
METAL COATINGS, ETCHING, HIGH FREQUENCY (U)
IDENTIFIERS: SURFACE WAVES (U)

The most efficient way of generating surface
elastic waves on piezoelectric substrates is by means
of interdigital electrode transducers. Such
transducers are generally fabricated by evaporating a
metallic coating on the substrate and employing
standard photoresist-chemical etching techniques
common to integrated circuit technology. The paper
describes a method developed for producing
interdigital electrode transducers with finger widths
of 1 1/4 microns in a delay line configuration. (U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 691 130 9/2 13/8

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 16 1 Jan-31 Mar
69,
JUL 69 54P Heynick, Louis M. ;
CONTRACT: DA-28-043-AMC-01261(E)
PROJ: DA-1-H-662705-A-055, SRI-5444
TASK: 1-H-662705-A-05503
MONITOR: ECOM 01261-16

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly rept. no. 15,
AD-688 178.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, THIN FILM STORAGE
DEVICES), (*THIN FILM STORAGE DEVICES, MANUFACTURING),
ELECTRON BEAMS, CAPACITORS, ETCHING, DIELECTRIC FILMS,
MOLYBDENUM, ALUMINA, SPUTTERING, MICROELECTRONICS,
ELECTRON LENSES, DEFLECTION, STORAGE TUBES (U)

This program is devoted to the preparation and
investigation of novel electron-beam-addressable
storage mosaics and to the construction of an
experimental large-capacity high-speed data-storage
system utilizing such mosaics. At present,
emphasis is on so-called micro-cap mosaics, the
elements of which are discrete, submicron-size
capacitors at the bases of regular arrays of closely
spaced holes in molybdenum/alumina/molybdenum film
sandwiches on sapphire substrates. A fine-mesh
screen is used as an array of electrostatic lenses
for mosaic-pattern exposure on electron-sensitive
resist. Further experimental work toward the
development of a vacuum etching process for the
selective removal of molybdenum is covered. The
results thus far indicate that ion-beam sputtering is
still the most useful process for this purpose.
Prior theoretical calculations of lens aberrations
indicated that with a field-emitter source, adequate
on-axis spot sizes should be obtained at long throw
distances (17 cm). Experimental confirmation
for throw distances up to about 10 cm was achieved
this quarter in the brass lens system. (U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 689 936 20/2

DEFENCE STANDARDS LABS MARIBYRNONG (AUSTRALIA)

DISLOCATION ETCHING OF CYCLOTRIMETHYLENE (U)
TRINITRAMINE CRYSTALS.

OCT 68 5P Connick, W. ; May, F. G. J.

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Crystal Growth, v5
p85-69 1969. No copies furnished.

SUPPLEMENTARY NOTE: Revision of report dated 24 Jul
68.

DESCRIPTORS: (*RDX, *DISLOCATIONS), ETCHING, CRYSTAL
GROWTH, ETCHED CRYSTALS, ORGANIC SOLVENTS, ACETONES. (U)
CYCLOHEXANONES, ELECTRON MICROSCOPY, AUSTRALIA

Habit faces of crystals of solution grown
cyclotrimethylene trinitramine (RDX, cyclonite)
are identified and dislocations characterised using
the etch pit technique. The effects of nature of
etchant and crystal history on etching are
investigated and the dependence of etch pit shape on
crystal face demonstrated. Observations by optical
and scanning electron microscopy are used to study
etch pit structure. The effects of thermal
treatment and plastic deformation on dislocation
glide and multiplication are examined and possible
glide planes postulated. (Author) (U)

AD- 689 936

UNCLASSIFIED

PAGE

86

AD- 689 274

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08
AD- 689 274 13/7 13/1 7/4

NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO) DIV OF
MECHANICAL ENGINEERING

QUARTERLY BULLETIN OF THE DIVISION OF MECHANICAL
ENGINEERING AND THE NATIONAL AERONAUTICAL
ESTABLISHMENT. (U)

DESCRIPTIVE NOTE: Rept. for 1 Jan-31 Mar 69.
69 80P

REPT. NO. DME/NAE-1969(1)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly Rept. no. 4
dated 31 Dec 68, AD-683 912.
DESCRIPTORS: (*FLUID AMPLIFIERS, ETCHING), (*FURNACES,
CONTAMINATION), (*SPRAYS, EVAPORATION), MECHANICAL
ENGINEERING, AERONAUTICS, PLATINUM ALLOYS, RHODIUM
ALLOYS, CANADA (U)

Contents: Fluidic device manufacture by
chemical etching; Contamination by platinum in a
resistance furnace wound with platinum - 20%
rhodium wire; Evaporation of sprays; Currents
projects of the division of mechanical engineering
and the national aeronautical establishment. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 688 863

11/4

WATERVLIT ARSENAL N Y BENET R AND E LABS

BOND STRENGTH CHARACTERISTICS OF ELECTRODEPOSITED
NICKEL ON BORON AND SILICON CARBIDE FILAMENTS
(REINFORCED COMPOSITES).

(U)

MAY 69 41P Greco.V. Peter ;Wallace.

William A. ;

PROJ: DA-0780-201

MONITOR: WVT 6916

UNCLASSIFIED REPORT

DESCRIPTORS: (*REINFORCING MATERIALS, ADHESION).
(*BORON, FILAMENTS), (*SILICON CARBIDES, FILAMENTS),
COMPOSITE MATERIALS, TUNGSTEN ALLOYS, NICKEL,
ELECTRODEPOSITION, TENSILE PROPERTIES, ETCHING,
FAILURE(MECHANICS), ENCAPSULATION, HEAT TREATMENT,
BONDING, ETCHING

(U)

IDENTIFIERS: BORON, FIBERS, *FIBER COMPOSITES,
*COMPOSITE MATERIALS, *MATRIX MATERIALS, *METALS,
FIBERS, SILICON CARBIDES

(U)

IAC ACCESSION NUMBER: MCIC-075593

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The mechanical properties of filament reinforced
composites consisting of boron, and silicon carbide
filaments in an electrodeposited nickel matrix from
the sulfamate bath, were investigated. Specific
attention was given to filament strength and bond
strength characteristics of the filament-matrix
interface and the effects from current density,
filament surface etching and heat treatment.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 688 783

11/6

11/3

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

GRINDING AND POLISHING LARGE PLATES FOR AIRCRAFT
SKINS,

(U)

MAR 69 14P Verezub.V. N. ;Khokhlov,B.

A. ;

REPT. NO. FTD-MT-24-437-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of
Samoletostroenie i Tekhnika Vozdushnogo Flota
(USSR) n8 p169-173 1966.

DESCRIPTORS: (*AIRPLANE PANELS, ALUMINUM ALLOYS),
(*ALUMINUM ALLOYS, FINISHES), ABRASIVE BLASTING,
CONFIGURATION, ETCHING, SURFACE ROUGHNESS, ABRASIVES,
USSR

(U)

(U)

IDENTIFIERS: *METAL POLISHING, TRANSLATIONS

Wedge-shaped plates of aluminum alloys, used for
aircraft skins, have to be either etched or milled to
give them varying cross sections; after etching, the
plates have to be polished. The report presents
the results of an investigation of the hydroabrasive
polishing method. (Author)

(U)

AD- 688 863

UNCLASSIFIED

PAGE

87

AD- 688 783

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 688 178

9/2

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 15, 1 Oct-31 Dec 68.

APR 69 56P Heynick, Louis N. ;

CONTRACT: DA-28-043-AMC-01261(E)

PROJ: DA-1-H-662705-A-055, SRI-5444

TASK: 1-H-662705-A-05503

MONITOR: ECOM 01261-15

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly rept. no. 14,

AD-681 892.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, *THIN FILM STORAGE DEVICES), ELECTRON BEAMS, ETCHING, MICROELECTRONICS, METAL FILMS, DIELECTRIC FILMS, CAPACITORS, MOLYBDENUM, ALUMINA, SPUTTERING, ELECTRON MULTIPLIERS, ELECTRON LENSES (U)

The program is devoted to the preparation and investigation of novel electron-beam-addressable storage mosaics and to the construction of an experimental, large-capacity, high-speed data-storage system utilizing such mosaics. At present, emphasis is on so-called micro-cap mosaics, the elements of which are discrete, submicron-size capacitors at the bases of regular arrays of closely spaced holes in molybdenum/alumina/molybdenum film sandwiches on sapphire substrates. Further work is described on the use of a fine-mesh screen as an array of lenses for electron-sensitive resist exposure. First result of using (1) the screen-lens resist-exposure technique, (2) ion-beam sputtering of molybdenum, and (3) tantalum-fluoride etching of alumina in succession to form arrays of holes having the ultimate packing density are described. (Author) (U)

AD- 688 178

UNCLASSIFIED

PAGE

88

AD- 687 644

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 687 644

7/4

20/12

LOCKHEED MISSILES AND SPACE CO PALO ALTO CALIF LOCKHEED RESEARCH LAB

ILLUMINATION AND THE PHOTOENGRAVING OF SILICON. (U)

DEC 68 6P Wales, R. D. ;

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of the Electrochemical Society, v116 n4 p483-488 Apr 69. No copies furnished.

SUPPLEMENTARY NOTE: Revision of report dated 22 Aug 68.

DESCRIPTORS: (*SEMICONDUCORS, ETCHING), (*SILICON, PHOTOENGRAVING), ILLUMINATION, ELECTROLYTES, CRYSTAL DEFECTS, ELECTROCHEMISTRY, RESOLUTION (U)

Equations have been derived for the rate and depth of engraving of near-intrinsic and low-resistivity n-type semiconductor materials. Semiempirical relationships for n-type silicon have been developed from the derived equations. The low-resistivity material, probably due to the defect structure, etched in triangular pits. The high-resistivity material gave very good engravings with a resolution of better than 12 micrometers. The good quality of the pattern and lens is critical in obtaining fine engravings, and the quality and degree of monochromaticity of the illumination affect the resolution and quality of the engraving. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 686 301

11/2

IIT RESEARCH INST CHICAGO ILL

FRACTURE MECHANISMS IN POLYCRYSTALLINE NONMETALLIC MATERIALS. (U)

DESCRIPTIVE NOTE: Final rept. 31 Mar 67-30 Mar 68,
APR 68 65P Johari, O. ; Parikh, N. M. ;
REPT. NO. IITRI-86080-4
CONTRACT: DAAG46-67-C-0122, DA-19-066-AMC-288(X)
PROJ: IITRI-86057
MONITOR: AMMRC CR-69-02(F)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Rept. no. AMRA-CR-66-09(F) dated Oct 66, AD-645 142.

DESCRIPTORS: (*ALUMINA, FRACTURE(MECHANICS)),
DISLOCATIONS, CRYSTAL DEFECTS, ETCHING, SURFACE
PROPERTIES, ELECTRON MICROSCOPY, FRACTOGRAPHY, CRYSTAL
SUBSTRUCTURE, GRAIN SIZE, SINGLE CRYSTALS, IMPURITIES,
HEAT TREATMENT, SAPPHIRE, SPINEL (U)
IDENTIFIERS: ELECTRON MICROSCOPY, ELECTRONIC
SCANNERS (U)

IAC ACCESSION NUMBER: MCIC-004048

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Fracture phenomena and their relation to
dislocations and dislocation motion were studied
during the course of the investigation. High-
purity single crystals were stressed up to 60,000
psi. Although cracks formed in the crystals, no
etch pits or associated dislocation motion was
observed. X-ray techniques and transmission
electron microscopy of thin films prepared by ion
bombardment are proposed for determining dislocation
velocity stress relationships. Present results
indicate that the impurities play a major role in
dislocation behavior in alumina and their presence is
essential for formation of etch pits.
Polycrystalline Lucalox of 5 micron, 20 micron,
and 30 micron grain size was fractured at room
temperature, 400, 700, and 1000C. Extensive
cleavage and intercrystalline fracture were observed
using the Scanning Electron Microscope. The
extent of cleavage decreased with increase in
temperature and grain size.

(U)

AD- 686 301

UNCLASSIFIED

PAGE

29

AD- 684 965

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT: BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 684 965 20/12 9/1

UNIVERSITY COLL OF NORTH WALES BANGOR DEPT OF PHYSICS

INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS. (U)

DESCRIPTIVE NOTE: Final technical rept. Oct 67-Sep 68,
SEP 68 15P Tredgold, R. H. ;
CONTRACT: DAJA37-68-C-0137
PROJ: DA-2-0-061102-B-31-E

UNCLASSIFIED REPORT

DESCRIPTORS: (*SEMICONDUCTING FILMS, EPITAXIAL GROWTH),
(*BORON COMPOUNDS, SEMICONDUCTING FILMS), (*PHOSPHIDES,
SEMICONDUCTING FILMS), VAPOR PLATING, ETCHING,
PHOSPHINE, X RAY DIFFRACTION, GREAT BRITAIN (U)
IDENTIFIERS: BORON PHOSPHIDE, CHEMICALS, VAPOR
DEPOSITION, THIN FILMS (U)

The report describes attempts to produce epitaxial
films of boron phosphide (BP) and the difficulties
encountered involving decomposing films and substrate
etching. A successful method of producing large
quantities of amorphous BP powder is presented and
methods for single crystal growth using this powder
as a starting material are described. Various
modifications and refinements on current apparatus
are described and new methods to be attempted are
discussed. (Author) (U)

UNCLASSIFIED

PORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 684 497 11/6 13/8

CARNegie-MELLON UNIV PITTSBURGH PA DEPT OF METALLURGY AND MATERIALS SCIENCE

GRAIN BOUNDARY SEGREGATION OF IMPURITIES IN METALS AND INTERGRANULAR BRITTLE FRACTURE. (U)

DESCRIPTIVE NOTE: Technical rept..

MAR 69 37P Low, John R. , Jr.; Goodman,

Stephen R. ; Smith, Craig L. ;

REPT. NO. CMU-031-727-1

CONTRACT: N00014-67-A-0314

PROJ: NR-031-727

UNCLASSIFIED REPORT

DESCRIPTORS: (*STEEL, HEAT TREATMENT), GRAIN BOUNDARIES, DUCTILE BRITTLE TRANSITION, IMPACT TESTS, PHOSPHORUS ALLOYS, ANTIMONY ALLOYS, ETCHING, NEUTRON ACTIVATION, CHEMICAL ANALYSIS (U)

The report discusses two investigations of temper embrittlement in low alloy quenched and tempered steel. Part I deals with additive effects of phosphorus and antimony as embrittling impurities in this type of grain-boundary embrittlement. Part II describes efforts to develop a method of determining the degree of segregation of alloys and impurities to grain-boundaries during temper embrittlement. The method under study involves neutron activation analysis of the etchant from etched intergranular fracture surfaces. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 684 014 7/4 20/12

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

INFLUENCE OF ACTIVE GASES ON THE ELECTROPHYSICAL PROPERTIES OF THE SURFACE OF SILICON. (U)

NOV 68 11P Arslambekov, V. A. ; Smirnov,

G. V. ;

REPT. NO. FTD-HT-23-622-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Simpozium po Elektronnym Protessam na Poverkhnosti i v Tonkikh Monokrystallicheskikh Sloyakh Poluprovodnikov (Symposium on Electronic Process on Surfaces and in their Monocrystal Layers of Semiconductors) Novosibirsk, 1967 p7-12.

DESCRIPTORS: (*SILICON, *SURFACE PROPERTIES), (*ETCHING, SILICON), (*PHOTOCONDUCTIVITY, SILICON), CRYSTAL DEFECTS, IMPURITIES, RELAXATION TIME, FLUORIDES, HYDROGEN COMPOUNDS, USSR, GASES, FLUORINE, AIR IDENTIFIERS: FLUORIDES, HYDROGEN, SURFACE CHEMISTRY, TRANSLATIONS (U)

The purpose of the investigation was to compare the electrophysical properties of a pure silicon surface with a surface coated by the film produced during chemical etching. The tests were made on n-type single-crystal silicon cut along the (111) plane and polished with corundum. The tests were made in atmospheres of air, hydrogen fluoride, gaseous fluorine, and other gases, and also in vacuum. Most experiments were performed at room temperature. The rate of surface recombination of the minority carriers was determined from the relaxation time of the photoconductivity after elimination by short light pulses from a flash lamp especially constructed for the purpose. The results showed that the etching reduces the surface recombination as result of the increased number of defects produced by the film. The causes for differences between the effects of different gases are explained. (U)

AD- 684 497

UNCLASSIFIED

PAGE 90

AD- 684 014

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 682 922

18/4

NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF

CHARGED PARTICLE TRACKS IN POLYMERS NO. 7:
SENSITIVITY ENHANCEMENT OF LEXAN.

(U)

NOV 68 12P Benton, Eugene V. ; Henke,
Richard P. ;
REPT. NO. USNRDL-TR-38-136

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-660 365.

DESCRIPTORS: (*RADIATION MEASURING INSTRUMENTS,
POLYESTER PLASTICS), (*POLYESTER PLASTICS, *IONIZATION
TRAILS), CONTROLLED ATMOSPHERES, ETCHING, PARTICLE
TRAJECTORIES, OPTICAL PROPERTIES, DIELECTRIC PROPERTIES,
ULTRAVIOLET RADIATION, OXYGEN (U)
IDENTIFIERS: LEXAN, POLYCARBONATE RESINS (U)

Ultraviolet radiation in the presence of oxygen has been used to greatly enhance track-etching rates in Lexan polycarbonate nuclear particle track detector. When irradiated detectors are stored in darkness, the slow variation of chemical track reactivity with the age of latent tracks can be explained as being caused by the presence of oxygen.

(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 681 892

9/2

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES.

(U)

DESCRIPTIVE NOTE: Quarterly rept. no. 14, 1 Jul-30 Sep 68,
DEC 68 45P Heynick, L. N. ;
CONTRACT: DA-28-043-AMC-01261(E)
PROJ: DA-1H662705A055, SRI-5444
TASK: 1H662705A05503
MONITOR: ECOM n1261-14

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly report no. 13, AD-677 410.
DESCRIPTORS: (*THIN FILM STORAGE DEVICES, *DATA STORAGE SYSTEMS), CAPACITORS, STORAGE TUBES, ELECTRON GUNS, ELECTRON MICROSCOPY, MICROELECTRONICS, MACHINING, FILMS, DIELECTRICS, ETCHING, DESIGN (U)

This program is devoted to the preparation and investigation of novel electron-beam-addressable storage mosaics and the construction of an experimental, large-capacity, high-speed data-storage system based on the use of such mosaics. Current emphasis is on so-called micro-cap mosaics, the elements of which are discrete, submicron-size capacitors at the bases of regular arrays of closely spaced holes in molybdenum/alumina/molybdenum film sandwiches. The technique of using a fine-mesh screen as an array of electrostatic lenses for resist exposure has been extended to the formation of images having about 0.5-micrometer spots spaced on about 1-micrometer centers. However, a larger illumination cathode is needed for obtaining more uniform exposure. Selective etching of alumina films with molybdenum as the resist is performed with a directed beam of tantalum fluoride, formed by reacting lead fluoride with tantalum. Modifications to the molybdenum lens system are described, which have resulted in very stable performance of the system, and useful storage and readout results are now being obtained therefrom. Development of the high-speed readout circuitry required has been initiated.

(U)

AD- 682 922

UNCLASSIFIED

PAGE

91

AD- 681 892

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 681 798 20/2 13/8 20/12

GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF

THE CHLORINE ETCHING OF SINGLE CRYSTAL SILICON, (U)

NOV 61 39P Baker, C. E. ; Goble, G. J.

REPT. NO. GDA-ERR-AN-094

UNCLASSIFIED REPORT

DESCRIPTORS: (*SILICON, *ETCHING), SURFACE PROPERTIES, CRYSTAL DEFECTS, PHOTOMICROGRAPHY, TEMPERATURE, SEMICONDUCTORS, ULTRAVIOLET RADIATION, SINGLE CRYSTALS, ETCHED CRYSTALS, CHLORINE (U)

The feasibility of using chlorine gas to etch silicon surfaces was demonstrated. The effect of illumination and temperature on the reaction was studied. Optimum results were obtained when the silicon was heated to 450C and illuminated with a high pressure mercury lamp. Current theories of etching both by acid solution and halogen vapor are discussed. (Author) (U)

AD- 681 798

UNCLASSIFIED

PAGE

92

AD- 680 561

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 680 561 13/8

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

CHEMICAL MILLING (DEEP CONTOUR ETCHING), (U)

MAY 68 14P Tarasova, V. A. ;
REPT. NO. FTD-HT-23-1225-67

UNCLASSIFIED REPORT

PORTIONS OF THIS DOCUMENT ARE ILLEGIBLE. SEE INTRODUCTION SECTION OF THIS ANNOUNCEMENT JOURNAL FOR CFSTI ORDERING INSTRUCTIONS.

SUPPLEMENTARY NOTE: Unedited rough draft trans. of mono. Spravochnik Mashinostroitel'ya (Reference Book for the Mechanical Engineer) n.p., 1963 v5 bk. 1 p387-393, by E. Harter.

DESCRIPTORS: (*CHEMICAL MILLING, REVIEWS), INORGANIC ACIDS, CLEANING, MASKING, ETCHING, LIQUID IMMERSION TESTS, ALUMINUM ALLOYS, TITANIUM ALLOYS, STAINLESS STEEL, TABLES (DATA), POLYVINYL CHLORIDE, USSR IDENTIFIERS: STEEL 1050, TRANSLATIONS (U) (U)

IAC ACCESSION NUMBER: MCIC-076468

IAC DOCUMENT TYPE: MCIC -HARD COPY--

For the shaping of parts, instead of mechanical removing of material to obtain a given form there is described a method of etching the material away with chemicals. There are four operations involved in this process. The material not to be removed is protected by paints and varnishes, preferably chlorinated-polyvinyl-chloride lacquers and enamels. Adhesive tapes and rubber are also used. The surface has to be prepared beforehand. Not more than 24 hours should elapse between the applying of these protections and the etching work. Weakening and warping is avoided by using chemicals instead of machining. Extensive tables are attached giving directions for the preparing and applying the coatings to protect material not to be removed and for removing the coating afterwards. (Author) (U)

IAC SUBJECT TERMS: M--(U)Chemical Milling, Etching, Aluminum Alloys, Titanium Alloys, Stainless Steel.;

AD-A089 500

DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA

F/6 13/8

ETCHING. (U)

SEP 80

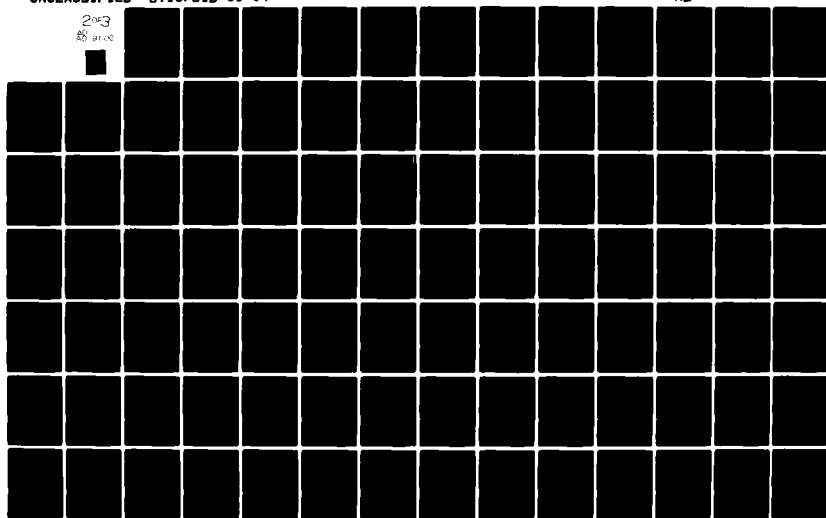
UNCLASSIFIED

DTIC/BIB-80-04

NL

2083

AD 8000



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD- 680 411 9/5

RCA LABS PRINCETON N J

INTEGRATED LOGIC NETWORKS. (U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 67-30 Sep 68,
 OCT 68 35P Allison, James F. ;
 CONTRACT: F19628-67-C-0290
 PROJ: AF-4641
 TASK: 464104
 MONITOR: AFRL 68-0516

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, *LOGIC CIRCUITS),
 SEMICONDUCTING FILMS, SILICON, SAPPHIRE, SPINEL,
 NUCLEATION, CRYSTAL GROWTH, ETCHING, ELECTRON
 MICROSCOPY (U)
 IDENTIFIERS: METAL OXIDE SEMICONDUCTORS (U)

This report describes research into the properties and uses of thin films of silicon-on-sapphire with emphasis on the development of high-speed complementary-symmetry MOS integrated circuits. The nucleation rate during the growth of the films was found to greatly affect the film properties. A comparison of diodes fabricated in silicon-on-sapphire and diodes fabricated in silicon-on-spinel (magnesium-aluminate) is made, indicating that some advantages may be realized by the use of spinel substrates. The results of the investigation into the shape of the edge of silicon etched in various etchants are presented. The use of the scanning electron microscope (SEM) has yielded invaluable information into the details of the shape of the edge which cannot be discerned with optical microscopy. Techniques are described which allowed the successful fabrication of a pattern containing 62,500 crossovers. The fabrication of high-speed nondestructive readout memory cells, exhibiting a read/write cycle time of 5 nsec, and the fabrication of a 5-stage ring oscillator are described. The latter operates at a frequency of 32 MHz at 4.5 V, which indicates a pair-delay of approximately 1 nsec. (Author) (U)

AD- 680 411

UNCLASSIFIED

PAGE

93

AD- 680 123

UNCLASSIFIED

ZOMOS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD- 680 123 11/6 20/11

BATTELLE MEMORIAL INST COLUMBUS OHIO

PLASTIC FLOW IN THE LOCALE ON NOTCHES AND CRACKS IN
 Fe-3Si STEEL UNDER CONDITIONS APPROACHING PLANE
 STRAIN. (U)

DESCRIPTIVE NOTE: Final rept.,
 NOV 68 63P Mehn, G. T. ; Rosenfield, A.
 R. ;
 CONTRACT: N00s-92383
 PROJ: SR-164
 MONITOR: SSC 191

UNCLASSIFIED REPORT

DESCRIPTORS: (*IRON ALLOYS, MECHANICAL PROPERTIES),
 CREEP, CRACK PROPAGATION, LOADS(FORCES), NOTCH
 SENSITIVITY, COLD WORKING, AGING(MATERIALS), PLASTIC
 PROPERTIES, ETCHING, DEFECTS(MATERIALS), LIFE
 EXPECTANCY, PHOTOMICROGRAPHY, MICROSTRUCTURE,
 MODELS(SIMULATIONS) (U)
 IDENTIFIERS: *CAST IRON, IRON ALLOY 3Si (U)

The development of the plastic zones generated by sharp through-cracks and blunter notches was studied systematically in plates of Fe-3Si steel. A sensitive etching technique revealed the plastic zone both on the plate surface and on parallel and normal interior sections. In addition, the progress of through-the-thickness deformation was followed by monitoring normal displacements at the plate surface. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M08

AD- 678 722 11/6

NEW YORK UNIV N Y

HYDROGEN-INDUCED EXPANSIONS IN TITANIUM-ALUMINUM ALLOYS. (U)

JAN 68 16P Margolin, Harold ; Portlisch,

Hansheinz ;

CONTRACT: DA-ARO(D)-31-124-G513

MONITOR: AROD 25.3:1

UNCLASSIFIED REPORT

Availability: Pub. in Transactions of the Metallurgical Society of AIME. v242 p1901-1913 Sep 68.

DESCRIPTORS: (*ALUMINUM ALLOYS, SURFACE PROPERTIES), (*TITANIUM ALLOYS, SURFACE PROPERTIES), INTERMETALLIC COMPOUNDS, X RAY DIFFRACTION, PHOTOMICROGRAPHY, ETCHING, METALLOGRAPHY, HEAT TREATMENT, RECRYSTALLIZATION, HYDROGEN EMBRITTLEMENT, DIFFUSION, AGING(MATERIALS) (U)
IDENTIFIERS: TITANIUM ALUMINIDES (U)

IAC ACCESSION NUMBER: MCIC-074324

IAC DOCUMENT TYPE: MCIC -HARD COPY--

A surface expansion was found to occur sometime after etching in titanium-aluminum alloys containing 9.5 to 12.5 wt pct aluminum. The structure formed, grew, and disappeared with time. The surface expansion was followed by microscope observations and interferometric and lattice parameter measurements. Activation energy measurements for the growth of the 'expansion structure' and chemical analysis indicated that the phenomenon occurred as a result of hydrogen pickup during etching. It is proposed that hydrogen initially enters octahedral sites of Ti3Al coherent with alpha Ti and later shifts to the tetrahedral sites. It is postulated that expansion occurs when hydrogen enters the tetrahedral sites. The expansion structure disappeared, it is proposed, because of diffusion of hydrogen from the surface into the body of the alloy and because of loss of coherency of Ti3Al. (Author) (U)

AD- 678 722

UNCLASSIFIED

PAGE

94

AD- 677 066

UNCLASSIFIED

Z0M08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M08

AD- 677 066 11/6 13/8

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

REDUCING HAND STRAIGHTENING BY CHEM-MILLING 7075 AND 7178 ALUMINUM ALLOY IN THE 'W' (OR NATURALLY AGED) CONDITION. (U)

DESCRIPTIVE NOTE: Final rept.,

OCT 60 23P Whiting, H. A. ; Plummer, C.

E. ;

REPT. NO. GDC-PR919

UNCLASSIFIED REPORT

DESCRIPTORS: (*ALUMINUM ALLOYS, *CHEMICAL MILLING), ETCHING, SURFACE ROUGHNESS, FINISHES, AGING(MATERIALS), PANELS, MECHANICAL WORKING, TOLERANCES(MECHANICS) (U)
IDENTIFIERS: ALUMINUM ALLCY 7075 (U)

The objective and purpose of the project was to etch 7075 and 7178 aluminum alloys, 0.125 in. thick, in the 'W' (or naturally aged condition). A maximum surface roughness (RMS) of 125 microinches was not to be exceeded. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 675 563 20/2 11/6

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A STUDY OF DISLOCATION STRUCTURE OF SUBBOUNDARIES IN
MOLYBDENUM SINGLE CRYSTALS. (U)

JAN 68 27P Feng Tuan, Li Ch'1.; Min
Nai-pen.;
REPT. NO. FTD-HT-23-593-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Wu Li Hsueh
Pao (Chinese People's Republic) v21 n2 p431-449
1965.

DESCRIPTORS: (*MOLYBDENUM, *DISLOCATIONS), GRAIN
STRUCTURES(METALLURGY), SINGLE CRYSTALS, ZONE MELTING,
ELECTRON BEAM MELTING, GRAIN BOUNDARIES, MATHEMATICAL
ANALYSIS, ETCHED CRYSTALS, ETCHING, ELECTROEROSIVE
MACHINING, CHINA (U)
IDENTIFIERS: TRANSLATIONS (U)

Using the etch-figure technique, the authors have
directly observed the dislocation structure of
subboundaries in electron-beam zone-melted molybdenum
single crystals. A thorough analysis of
experimental results are given. The authors have
observed various patterns indicating interactions of
singular dislocations with subboundaries, in
particular, 'steps' on the subboundaries induced by
singular dislocations and also interactions of
inclusions with subboundaries. The etch-figure
method of observing dislocations is an effective
means for the quantitative study of dislocation
substructure in crystals. (Author) (U)

AD- 675 563

UNCLASSIFIED

PAGE 25

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 675 421 20/12

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ELECTRONIC AND IONIC PROCESSES IN SOLIDS, NO. 1, 1964
(SELECTED ARTICLES). (U)

JAN 68 18P Andronikashvili, E. L.;
Kvavadze, K. A.; Getiya, M. Sh.; Politov, N.
G.;
REPT. NO. FTD-HT-23-1240-67

UNCLASSIFIED REPORT

PORTIONS OF THIS DOCUMENT ARE ILLEGIBLE. SEE
INTRODUCTION SECTION OF THIS ANNOUNCEMENT JOURNAL FOR CFSTI
ORDERING INSTRUCTIONS.

SUPPLEMENTARY NOTE: Edited trans. of Elektronnyye i
Ionnye Protssesy v Tverdykh TelaKh (USSR) n1 p31-
41, 94-97 1964.
DESCRIPTORS: (*CRYSTAL DEFECTS, *DAMAGE), (*SODIUM
CHLORIDE, *ETCHING), POTASSIUM COMPOUNDS, CHLORIDES,
LITHIUM FLUORIDES, NEUTRON SCATTERING, ANNEALING,
DISLOCATIONS, ETCHED CRYSTALS, ION BOMBARDMENT, USSR,
(U)USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

Contents: Radiation changes of dislocation
densities in ionic crystals; Ionic etching of
sodium chloride crystals. (U)

AD- 675 421

UNCLASSIFIED

ZOM09

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 674 757 20/2

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

ETCHING AND REGROWTH OF CUPROUS CHLORIDE. (U)

JUN 68 13P Chase, Armond B. ; Wilcox,
William R. ; Teviotdale, James R. ;

REPT. NO. TR-0158(9230-03)-3

CONTRACT: F04695-67-C-0158

MONITOR: SANSO TR-68-281

UNCLASSIFIED REPORT

DESCRIPTORS: (*COPPER COMPOUNDS, *ETCHING). (*CRYSTAL GROWTH, COPPER COMPOUNDS), CHLORIDES, CRYSTAL STRUCTURE, TWINNING(CRYSTALLOGRAPHY), ETCHED CRYSTALS, HYDROCHLORIC ACID, NITRIC ACID, DISLOCATIONS, ACETONES (U)
IDENTIFIERS: COPPER(I) CHLORIDE (U)

Partial dissolution in hydrochloric acid followed by gentle rinsing in water allowed individual grains and twins in cuprous chloride to be distinguished easily with the naked eye. It was found that regrowth occurred during rinsing because of dissociation of the soluble $\text{CuCl}_2(-)$ complex. This regrowth resulted in the formation of a shingled surface which served to reflect light quite differently from different grain orientations. Polished surfaces were found to result from etching with 50:50 nitric acid-water for times up to 30 sec at room temperature. Dislocation etch pits were revealed by placing cuprous chloride in hydrochloric acid for times up to 5 sec followed by spraying with acetone. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 674 591 11/6 11/4 20/11

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

MECHANICAL BEHAVIOR OF BERYLLIUM WIRE REINFORCED PLASTIC COMPOSITES. PART II. TIME DEPENDENT MECHANICAL PROPERTIES. (U)

DESCRIPTIVE NOTE: Technical rept. Sep 66-Oct 67,
JUN 68 40P Schwartz, H. S. ; Mahieu, W. ;

REPT. NO. AFML-TR-66-404-Pt-2

PROJ: AF-7340

TASK: 734003

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Part I, AD-657 309.
DESCRIPTORS: (*COMPOSITE MATERIALS, LAMINATED PLASTICS), (*LAMINATED PLASTICS, MECHANICAL PROPERTIES), BERYLLIUM, WIRE, DUCTILITY, MODULUS OF ELASTICITY, TENSILE PROPERTIES, EPOXY RESINS, ELONGATION, SURFACE ROUGHNESS, ETCHING, RUPTURE, FATIGUE(MECHANICS) (U)

IAC ACCESSION NUMBER: PL-011532

IAC DOCUMENT TYPE: PLASTIC -HARD COPY--

The dependence of the mechanical behavior of beryllium wire reinforced plastic composites on duration of load (creep and stress-rupture), number of loading cycles (fatigue), and vibrational frequency (dynamic modulus and damping) was investigated. Where possible, this behavior is compared with that of the constituent beryllium wire and other structural materials. The stress at which plastic deformation commences (elastic limit) in beryllium wire was determined. The static mechanical properties of beryllium wire which had been acid etched to achieve a smooth surface were determined and were compared with similar properties of as received beryllium wire. (Author) (U)

IAC SUBJECT TERMS: P--(U)Bending, Beryllium wire, Epoxy, Mechanical properties, Time dependent properties, Composites, ZZ Unlimited.;

AD- 674 757

UNCLASSIFIED

PAGE

AD- 674 591

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 674 066 11/6 13/8

BATTILLE MEMORIAL INST COLUMBUS OHIO DEFENSE METALS
INFORMATION CENTERA REVIEW OF METALLOGRAPHIC PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS. (U)

JUN 68 20P Price, C. W. ; McCall, J.

L. ;

REPT. NO. DMIC-Mer--237

CONTRACT: F33615-68-C-1325

UNCLASSIFIED REPORT

DESCRIPTORS: (*BERYLLIUM, METALLOGRAPHY), (*BERYLLIUM
ALLOYS, METALLOGRAPHY), REVIEWS, ELECTRON MICROSCOPY,
FINISHES, GRINDING, ETCHING, CUTTING, MACHINING. (U)

CHEMICAL MILLING

The Memorandum is divided into four topics:

- (1) Grinding, (2) Polishing, (3)
Etching, and (4) Thinning for transmission
electron microscopy. Procedures reviewed are also
listed in tabular form for ready reference. In
addition to reviewing published references, the
authors have included a considerable amount of
previously unpublished data based on their own
experience and private communication with associates
in the field. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 673 601 20/5

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

LONG-WAVELENGTH INFRARED PB(1-X)SN(X)TE DIODE
LASERS. (U)

DESCRIPTIVE NOTE: Journal article,

MAR 68 4P Butler, Jack F. ; Harman,

Theodore C. ;

REPT. NO. JA-3240

CONTRACT: AF 19(628)-5167

MONITOR: ESD TR-68-223

UNCLASSIFIED REPORT

Availability: Pub. in Applied Physics Letters,
v12 n10 p347-349, 15 May 68.

DESCRIPTORS: (*SEMICONDUCTOR DEVICES, *LASERS),
SEMICONDUCTOR DIODES, LEAD COMPOUNDS, TIN COMPOUNDS,
TELLURIDES, SOLID SOLUTIONS, INFRARED RADIATION, CRYSTAL
GROWTH, ANNEALING, DIFFUSION, ETCHING (U)
IDENTIFIERS: LEAD STANNOTELLURIDES (U)

Diode lasers with emission wavelengths as long as
28 microns have been fabricated using Pb(1-
x)Sn(x)Te with x up to 0.27. Properties of
laser diodes at 77K and 12K have been measured
for a number of compositions in the range 0.15 < or
x < or = 0.27. The vapor growth and annealing-
diffusion steps were performed in a special quartz
ampoule which remained sealed throughout the process.
Threshold current densities were dependent on diode
surface conditions and could be reduced by at least
50% by etching. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 673 143 9/2 9/5

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 12, 1 Jan-31 Mar 68.

JUL 68 41P Heynick, Louis N. ;

CONTRACT: DA-28-043-AMC-01261(E)

PROJ: DA-1HG22001A055, SRI-5444

TASK: 1HG22001A055-03

MONITOR: ECOM 01261-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Quarterly rept. no. 11, AD-668 242.

DESCRIPTORS: (*DATA STORAGE SYSTEMS, *MICROELECTRONICS), (*THIN FILM STORAGE DEVICES, SANDWICH CONSTRUCTION), CAPACITORS, DIELECTRIC FILMS, ELECTRON BEAMS, STORAGE TUBES, ELECTRON GUNS, METAL FILMS, MOLYBDENUM, ETCHING, NETWORKS, SPUTTERING, FOCUSING, ELECTRON MICROSCOPY, ACRYLIC RESINS (U)

IDENTIFIERS: COMPUTER AIDED DESIGN (U)

Progress is described on a program devoted to the preparation and investigation of two novel kinds of electron-beam-addressable storage elements of submicron size and densely packed arrays of these elements, and to the construction of a large-capacity, high-speed, electron-beam-addressable, data-storage system utilizing regular arrays of these elements. Further work on poly(methyl methacrylate), and electron-sensitive material that exhibits both positive- and negative-resist behavior, is discussed leading to a basic procedure for utilizing this material to advantage in storage mosaic formation. A new technique for exposing positive resists in regular patterns of high packing density over large areas is described. This technique is based on the use of a fine-mesh screen as a corresponding array of local electron lenses. Recent developments of aluminum-oxide etching with vaporized lead fluoride (PbF₂) are covered, including the use of RF for ameliorating the unwanted etching of molybdenum resist perimeters surrounding the alumina film areas. First results of storage and readout on regular arrays of micro-cap elements are presented. (U)

AD- 673 143

UNCLASSIFIED

PAGE

38

AD- 672 095

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 672 095 9/1 11/7 13/8

RAYTHEON CO WALTHAM MASS RESEARCH DIV

CHEMICAL VAPOR DEPOSITED MATERIALS FOR ELECTRON TUBES. (U)

DESCRIPTIVE NOTE: Triannual rept. no. 1, 15 Dec 67-14

Apr 68, JUN 68 54P Steele, S. R. ; Schilling, M.

; Pappis, J. ; Simpson, J. ;

REPT. NO. S-1075

CONTRACT: DAAB07-68-C-0153

PROJ: DA-1HG22/01A055

TASK: 1HG22001A055-01

MONITOR: ECOM 0156-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*ELECTRON TUBE PARTS, *VAPOR PLATING), MICROWAVE EQUIPMENT, BORON COMPOUNDS, NITRIDES, WAVEGUIDES, ELECTRODES, ELECTRIC INSULATION, ETCHING, WAVEGUIDE WINDOWS, FILMS, DENSITY, DEPOSITS, STABILITY, BONDING, NICKEL ALLOYS, ZIRCONIUM COMPOUNDS, HYDRIDES (U)

IDENTIFIERS: *BORON NITRIDES, *CHEMICALS, *VAPOR DEPOSITION (U)

Microwave tests of etched patterns of a conductor on a dielectric substrate have shown that fine-lined ruled structures can provide slow-wave circuits of the Karpilne type when the assembly is uniform over its length. Tests have shown that grid spacers can easily be made of high-density isotropic CVD BN by using an air abrasive unit. Several isotropic CVD BN depositions to fabricate cylindrical microwave windows were made with uniformly good results. Isotropic CVD BN materials with densities both higher and lower than standard isotropic CVD BN were prepared in small quantities. Preliminary measurements have shown that certain of these materials may be more desirable for some applications than standard isotropic CVD BN. High-density isotropic CVD BN can be prepared by reducing reactant concentrations but the deposition rate is low. Increased density, together with increased deposition rate, appears possible with proper control of critical deposition parameters. Good results were obtained with a special metallizing tape (88% ZnH₂-12% Ni) on boron nitride. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 671 925 11/3 11/6 14/2

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES
FOR METALLOGRAPHIC EXAMINATION, (U)

NOV 67 13P Joyce, Robert L.; Janowski,
Kenneth R.; Richardson, James H.;
REPT. NO. TR-0158(3250-10)-11
CONTRACT: F04695-67-C-0158
MONITOR: SAMSO TR-68-220

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color, reproducible
in black/white only after original supply is exhausted.
DESCRIPTORS: (*HAFNIUM COMPOUNDS, ETCHING), (*ZIRCONIUM
COMPOUNDS, ETCHING), (*CARBIDES, *ETCHING),
METALLOGRAPHY, EUTECTICS, SOLID SOLUTIONS, CARBON
ALLOYS, GRAPHITE, COLORS, GRAIN STRUCTURES(METALLURGY),
NITRIC ACID, HYDROGEN COMPOUNDS, FLUORIDES (U)
IDENTIFIERS: ETCHANTS, HAFNIUM CARBIDE, FLUORIDES,
HYDROGEN, ZIRCONIUM CARBIDE (U)

An etchant is described that imparts color to the
surface of hafnium and to zirconium carbide
metallographic specimens. These colors not only
provide a sharp delineation of individual grains, but
also define the boundaries of eutectic colonies that
contain both graphite and carbide. For a given
specimen, similar orientations of grains may be
inferred from similar coloration. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 669 099 20/12 20/2

STANFORD RESEARCH INST MENLO PARK CALIF

GROWTH, PROCESSING AND CHARACTERIZATION OF BETA-
SILICON CARBIDE SINGLE CRYSTALS, (U)

FEB 68 44P Bartlett, Robert W.; Mueller,
Robert A.;
REPT. NO. Scientific-2
CONTRACT: F19628-67-C-0243
PROJ: AF-5620, SRI-PMU-6488
TASK: 562006
MONITOR: AFCL 68-0166

UNCLASSIFIED REPORT

DESCRIPTORS: (*SEMICONDUCTORS, SILICON CARBIDES),
(*SILICON CARBIDES, *CRYSTAL GROWTH), VAPOR PLATING,
SUBSTRATES, EPITAXIAL GROWTH, SILANES, PROPANE, SURFACE
PROPERTIES, DOPING, IMPURITIES, ALUMINUM, BORANES,
SEMICONDUCTOR DIODES, TRANSISTORS, ETCHING, MASKING,
ELECTROLUMINESCENCE (U)
IDENTIFIERS: CHEMICALS, VAPOR DEPOSITION, METAL-OXIDE
SEMICONDUCTORS (U)

IAC ACCESSION NUMBER: MCIC-005751
IAC DOCUMENT TYPE: MCIC -HARD COPY--
Vapor deposition of beta-silicon carbide on
(111) beta-silicon carbide platelets is being
studied using methyltrichlorosilane or mixtures of
silane and propane. Although epitaxial deposits
were achieved with either source gas, low octahedral
steps (triangles) and numerous intergrown star-
shaped hillocks on the alternate side usually occur.
Process conditions were systematically varied to
improve the surface perfection, and n-type epitaxial
layers with smooth surfaces free of hillocks were
grown on n-type beta-silicon carbide crystal
substrates using CH₃SiCl₃. Epitaxial
deposits of n-type beta-silicon carbide were grown on
aluminum-doped p-type silicon carbide substrates, and
p-type epitaxial deposits were grown on n-type
crystals using diborane for p-doping during vapor
deposition. Processing of diodes requires a
suitable etching procedure. Hydrogen etching
through thermally grown oxide masks was not
successful because of reduction of the oxide. (U)

AD- 671 925

UNCLASSIFIED

PAGE

99

AD- 669 099

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 668 449

20/2

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

ETCHING BEHAVIOR OF IN2O3 GROWN FROM PbO-B2O3, (U)

MAR 68 18P Chase, Armond B. ; Tevlotdale,
James R. ;
REPT. NO. TR-0158(9230-03)-4
CONTRACT: F04695-67-C-0158
MONITOR: SAMSO TR 68-165

UNCLASSIFIED REPORT

DESCRIPTORS: (*ETCHED CRYSTALS, *INDIUM COMPOUNDS),
OXIDES, SINGLE CRYSTALS, ETCHING, NITRIC ACID,
HYDROCHLORIC ACID, CRYSTAL GROWTH, DISLOCATIONS
IDENTIFIERS: INDIUM(III) OXIDE (U)

Single crystals of In2O3 grown from a PbO-
B2O3 solution are etched by HNO3 or HNO3-
HCl solutions. Characteristic etch pits and etch
tubes are described. The number of etch pits is
found to be related to the growth history of the
crystals. The relationship of the etch tubes to
crystal growth is discussed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 668 242 9/2 9/5

STANFORD RESEARCH INST MENLO PARK CALIF

HIGH-INFORMATION-DENSITY STORAGE SURFACES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 11, 1 Oct-31 Dec
67,
MAR 68 32P Rogers, Kendal T. ; Cone,
Donald R. ; Heynick, Louis N. ;
CONTRACT: DA-28-043-AMC-01261(E)
PRGJ: DA-1H6-22001-A-055
TASK: 1H6-22001-A-055-03
MONITOR: ECOM 01261-11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-665 634.
DESCRIPTORS: (*DATA STORAGE SYSTEMS, *MICROELECTRONICS),
(*THIN FILM STORAGE DEVICES, SANDWICH CONSTRUCTION),
CAPACITORS, DIELECTRIC FILMS, ELECTRON BEAMS, VACUUM
APPARATUS, STORAGE TUBES, ELECTRON GUNS, METAL FILMS,
MOLYBDENUM, ETCHING, SPUTTERING, ARGON, ELECTRON
MULTIPLIERS, SILOXANES, METALORGANIC COMPOUNDS, ACRYLIC
RESINS, COMPUTER PROGRAMS (U)
IDENTIFIERS: COMPUTER AIDED DESIGN, PROTECTIVE
COATINGS (U)

This program is devoted to the preparation and
investigation of two novel kinds of electron-beam-
addressable storage elements of submicron size and
densely packed arrays of these elements; also to the
construction of a large-capacity, high-speed,
electron-beam-addressable, data-storage system
utilizing regular arrays of these elements. Work
on storage mosaics was devoted to further development
of techniques for the preparation of regular arrays
of densely packed micro-cap elements including:
investigations of other resists besides
tetrakis(phenyl)siloxysilane, such as KPR,
Shipley's AZ 111, and poly(methyl
methacrylate); argon-ion sputtering of molybdenum
films; and lead-fluoride etching of aluminum-oxide
films. Appropriate combinations of these
techniques appear promising. The development of a
computer program for the design of electron-optical
systems capable of scanning 100,000,000 elements per
field for mosaic fabrication and for element address
is continuing. (U)

AD- 668 449

UNCLASSIFIED

PAGE

100

AD- 668 242

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 667 368 9/5

BUNKER-RAMO CORP CANOGA PARK CALIF DEFENSE SYSTEMS
DIV

PLANAR COAXIAL INTERCONNECTION TECHNIQUES. (U)

DESCRIPTIVE NOTE: Semi-annual rept. no. 1. 1 Apr-30

Sep 67, MAR 68 116P Parks, Howard L. ; Griff, William ; Kitaguchi, Tom ;

CONTRACT: DA-28-043-AMC-02024(E)

PROJ: DA-1EG-22001-A-440

TASK: 1EG-22001-A-440 01

MONITOR: ECOM 02024-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIRCUIT INTERCONNECTIONS, SANDWICH CONSTRUCTION), DIELECTRICS, ETCHING, COMPUTERS, LAMINATES, BONDING, SHIFT REGISTERS, INTEGRATED CIRCUITS, MANUFACTURING, HIGH FREQUENCY, VERY HIGH FREQUENCY (U)

The semi-annual technical report documents the research and developmental effort for Phase I of the follow-on program concerning a Multilayer Planar Coaxial Interconnection System. The primary objectives of the program are to optimize developments of materials and fabrication techniques for a multilayer planar coaxial structure which is applicable for interconnecting subassemblies and assemblies utilized in computers operating in the 20- to 50-MHz range. The developmental areas essential to providing such a multilayer system are documented in this report. These include investigations of improved etching techniques, dielectric systems, conductor applications, lamination methods, through-hole plating technology, and microbonding. The experimental development model designed for the Phase I effort is a pseudorandom code generator, which is comprised of a 5-stage shift register with two exclusive OR circuits and a propagation delay oscillator for clock. Operation of this pseudorandom clock generator was at 70 MHz, which showed a capability higher than the program goals of 20 to 50 MHz. Manufacturing specifications for the multilayer structure have been established and documented in this report with regard to material requirements. (U)

AD- 667 368

UNCLASSIFIED

PAGE

:01

AD- 666 543

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 666 543 18/4

NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF

A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE, (U)

JAN 68 251P Benton, Eugene V. ;

REPT. NO. USNRDL-TR-68-14

PROJ: ZF-011-01-01

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIATION MEASURING INSTRUMENTS, NITROCELLULOSE), (*PARTICLE TRAJECTORIES, *NITROCELLULOSE), CHARGED PARTICLES, DIELECTRICS, ALPHA PARTICLES, FISSION PRODUCTS, ION BOMBARDMENT, ETCHING, MICROSCOPY, COSMIC RAYS, DOSIMETERS, FALLOUT, AUTORADIOGRAPHY (U)

Both experimental and theoretical contributions are presented on the topic of dielectric charged particle track detectors. Cellulose nitrate was the principal track recording material. The study covers four areas: The chemical etch development of tracks; Track registration criteria; Range-energy calculations and comparisons with the etched tracks lengths; Charged particle detection. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 665 280

20/2

7/4

MCMASTER UNIV HAMILTON (ONTARIO)

ON THE SLOPE OF ETCH PITS. (U)

DESCRIPTIVE NOTE: Technical rept.,

JAN 68 37P Ives, M. B. ; McAusland, D.

D. ;

REPT. NO. TR-11

CONTRACT: Nonr-3925(00)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Technical rept. no. 11,

AD-660 381.

DESCRIPTORS: (*ZINC, ETCHED CRYSTALS), (*CRYSTAL DEFECTS, *ETCHED CRYSTALS), CRYSTAL SUBSTRUCTURE, SOLVENTS, GEOMETRIC FORMS, SYMMETRY(CRYSTALLOGRAPHY), METAL CRYSTALS, ETCHING, SOLVENT ACTION, DISLOCATIONS, THESESES (U)

IDENTIFIERS: ETCH PITS (U)

It is pointed out, by means of a literature review, that etch pits formed at the sites of singular defects in an otherwise slowly dissolving surface are usually shallow, composed of faces misoriented from that surface by only a few degrees. An etch pit study of the (0001) zinc surface dissolved in alcoholic hydrochloric acid solutions supports the theory that the slopes of etch pits are controlled by the dissolution kinetics of the crystals. Pits widen at a rate independent of the type of defect attacked, but the slopes are dictated by the relative rates of dissolution at the defect sites. (U)

(Author)

AD- 665 280

UNCLASSIFIED

PAGE

102

AD- 664 554

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 664 554

20/6

AEROSPACE CORP EL SEGUNDO CALIF LAB OPERATIONS

ELIMINATION OF DAMAGE TO METALLOGRAPH OBJECTIVE LENSES BY ETCHANTS CONTAINING HYDROFLUORIC ACID. (U)

NOV 67 12P Richardson, James H. ;

REPT. NO. TR-0158(3250-10)-10

CONTRACT: F04695-67-C-0158

MONITOR: SAMSO TR-68-29

UNCLASSIFIED REPORT

DESCRIPTORS: (*MICROSCOPES, LENSES), (*LENSES, DAMAGE), ETCHING, VAPORS, INORGANIC ACIDS, PROTECTION, NEUTRALIZATION, SOLUTIONS(MIXTURES), IONS, FLUORINE COMPOUNDS, EFFECTIVENESS (U)

IDENTIFIERS: HYDROFLUORIC ACID (U)

A technique is described for eliminating the potential hazard to metallographic objectives from traces of hydrofluoric acid from etchants on specimens. Specimens are immersed for 1 hr in a solution containing ammonium pentaborate and are then rinsed and dried. This solution reacts with the acid to form a soluble and noncorrosive compound. No visible damage to metallograph lenses (i.e., etching) has been observed from the use of treated specimens. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 664 490 10/2 7/4

NAVAL RESEARCH LAB WASHINGTON D C

ON THE ACTIVITY OF PLATINUM CATALYSTS IN SOLUTION.
PART I. EFFECTS OF THERMAL TREATMENT AND CHEMICAL
ETCHING ON THE PT-O/HYDROGEN SPECIFIC REACTION RATE. (U)

DESCRIPTIVE NOTE: Interim rept.,

DEC 67 16P Warner, Theodore B. ;

Schuldiner, Sigmund ; Piersma, Bernard J. ;

REPT. NO. NRL-6622-Pt-1

PROJ: SF-020-05-01-0809

UNCLASSIFIED REPORT

DESCRIPTORS: (*FUEL CELLS, CATALYSTS), (*CATALYSTS,
*PLATINUM), OXYGEN, HYDROGEN, REACTION KINETICS,
CATALYSIS, HEAT TREATMENT, ETCHING, CHEMISORPTION,
ELECTRODES, OXIDATION REDUCTION REACTIONS,
ELECTROCHEMISTRY (U)

The effects of thermal treatment and chemical etching of platinum on the specific rate of the chemical reaction of chemisorbed oxygen with hydrogen were determined. The hydrogen was present in electrochemically clean 1M H₂SO₄ and in the derma of the metal. On successive thermal treatments of bright Pt beads, which were heated to the melting point and then slowly recrystallized under high temperatures, the specific rate varied randomly from trial to trial. Where heating was more uniform and the cooling rate slower, reaction of hydrogen with Pt-O was usually faster. Repeated aqua regia etching of a given Pt bead caused monotonic improvement until a rate between 0.014 and 0.021 amp/sq cm was attained. Rates on Pt wire electrodes, which probably differed from the flame-formed Pt beads both in average crystallite size and number of defects (created by the drawing process and only partially removed by subsequent annealing), were highly variable but considerably lower than on beads. Surfaces whose activity for the Pt-O/hydrogen reaction differed manifold showed no differences in anodic charging curves. Electrochemical rates of water oxidation at +0.617 v and +0.587 v (NHE) and reduction of hydrogen ions at +0.300 v also did not differ. It appears that many electrochemical reactions are insensitive to these differences in surface condition. (Author) (U)

AD- 664 490

UNCLASSIFIED

PAGE

103

AD- 664 126

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 664 126 9/5

RADIO CORP OF AMERICA NEW YORK ADVANCED COMMUNICATIONS LAB

MICROMINIATURE MONOLITHIC CROSSPOINT
INTERCONNECTIONS. (U)

DESCRIPTIVE NOTE: Final rept. no. 4, 1 Jul 66-30 Sep 67,

DEC 67 172P

Kalef, M. ; Spann, L. ;

REPT. NO. CR-67-565-35

CONTRACT: DA-28-043-AMC-02260(E)

PROJ: DA-1H6-22001-A-440

TASK: 1H6-22001-A-440-01

MONITOR: ECOM 02260-F

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-653 597.

DESCRIPTORS: (*CIRCUIT INTERCONNECTIONS,
*MICROELECTRONICS), MANUFACTURING, INTEGRATED CIRCUITS,
PACKAGING, SWITCHING CIRCUITS, DIODES (SEMICONDUCTORS),
SILICON, ULTRASONIC WELDING, DEPOSITION, ETCHING,
RESISTORS, CHROMIUM, ELECTRICAL PROPERTIES (U)

The report describes the techniques used for fabricating a 1 x 4 microminiature crosspoint. It also presents results from electrical tests made on 1 x 1 and 1 x 4 crosspoints. A general discussion of process steps for manufacturing beam-lead diodes is given, followed by descriptions of the deposition and etching of chromium resistors and the gold interconnection patterns, mounting of monolithic logic chips, ultrasonic wire bonding, mounting of beam-lead diodes and the final packaging of a 1 x 4 crosspoint. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 663 885 11/2 20/11

NAVAL RESEARCH LAB WASHINGTON D C

ENVIRONMENTALLY ASSISTED CRACK GROWTH IN GLASS. (U)

DESCRIPTIVE NOTE: Interim rept.,

NOV 67 21P Sinclair, G. M. ; Withrow, S.

P. ;

REPT. NO. NRL-6635

UNCLASSIFIED REPORT

DESCRIPTORS: (*GLASS, *CRACKS). MECHANICAL PROPERTIES, FRACTURE(MECHANICS), RELIABILITY, FATIGUE(MECHANICS), STRESSES, SURFACE PROPERTIES, COATINGS, ENVIRONMENT, ATMOSPHERES, HUMIDITY, DEFECTS(MATERIALS), ETCHING (U)

IAC ACCESSION NUMBER: MCIC-005597

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Glass exhibits the properties of high compressive strength and low density. However, the surface of unprotected glass contains flaws which grow under low stress in moist conditions to critical size for failure. Various methods were used to investigate and increase the reliability of glass under stress. Data were obtained on failure of unprotected glass plates subjected to biaxial tension at about 50-percent relative humidity. Analysis by extreme-value statistics indicated that the failure condition could be represented by a plane surface in a three-dimensional coordinate system composed of extreme-value probability, log stress, and log time.

Removal of surface flaws by etching in 5-percent aqueous hydrofluoric acid increased the mean failure strength from approximately 30,000 psi to 145,000 psi, with a value of 300,000 psi biaxial tension being attained in one case. Increases in lifetimes of one, two, and three orders of magnitude were obtained by protecting the glass from atmospheric moisture by preheating and coating with petrolatum, preheating glass and coating with preheated petrolatum, and experimenting at -30F, respectively. Slight improvement in minimum time to failure was obtained by eliminating the weaker specimens by proof testing. (Author) (U)

AD- 663 885

UNCLASSIFIED

PAGE

:04

AD- 662 748

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 662 748 9/1 9/5

RADIO CORP OF AMERICA SOMERVILLE N J DEFENSE MICROELECTRONICS

HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 10, 1 Jun-31 Aug 67,

NOV 67 50P Topfer, Morton L. ; Schelhorn,

Robert L. ; Mitchell, Joseph M. ;

CONTRACT: DA-28-043-AMC-01230(E)

PROJ: DA-1CO-24401-A-348

MONITOR: ECOM 01230-10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-660 319.
DESCRIPTORS: (*FILMS, *RESISTORS), (*MICROELECTRONICS, *CIRCUITS), HAFNIUM, ELECTRICAL RESISTANCE, SUBSTRATES, HAFNIUM COMPOUNDS, OXIDES, SPUTTERING, ANODIC COATINGS, ETCHING, SILICON, SEMICONDUCTOR DEVICES, CAPACITORS, MANUFACTURING (U)

Fabrication of 1-megohm thin-film hafnium resistors (10,000 ohms/sq.) exhibiting temperature coefficients of resistance (TCR) of approximately -900 ppm was accomplished. A complete TCR curve was plotted from experimental data obtained from samples between 6 and 10,000 ohms/sq. deposited on glazed ceramic substrates. Investigation of etching procedures for fine-line resistor patterns to be deposited on passivated silicon wafers was begun. New resistor test patterns were chosen which will yield 1000 individual elements of five different geometries per wafer. Procedures for fabrication of resistors and capacitors using hafnium technology on silicon are outlined. Detailed capacitance-voltage plots of the hafnium-dioxide films indicated the presence of contaminants. Modifications in the fabrication processes eliminated most of the contamination. Characteristics are reported for p-channel MOS devices which were fabricated. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 661 042 9/5

TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR-COMPONENTS
DIV

HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 5, 1 Mar-31 May
67, OCT 67 22P Teague, E. Clayton ; Natelski,

Stacy B. ; Dennis, C. ; Sharif, L. ;

REPT. NO. 03-67-66

CONTRACT: DA-28-043-AMC-02029(E)

PROJ: DA-1H6-22001-A-440

TASK: 03

MONITOR: ECOM 02029-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, MANUFACTURING),
GERMANIUM, CRYSTAL GROWTH, GALLIUM ARSENIDES,
SUBSTRATES, DEPOSITION, ETCHING, MASKING, ALUMINUM
COMPOUNDS, OXIDES, SILICON COMPOUNDS, NITRIDES (U)

The report contains a summary of experimental work
related to the following topics: (1) Use of
aluminum oxide, silicon oxide, and silicon nitride as
possible masking materials for selectively etching
GaAs and Ge deposition in GaAs; (2)
Isolation properties of GaAs sub Si as
received from crystal processing and after oxide and
germanium growth; (3) Device characteristics
of junctions formed in germanium regions selectively
grown in germanium and in gallium arsenide
substrates. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 660 381 20/2

MCMaster UNIV HAMILTON (ONTARIO)

A STUDY OF LITHIUM FLUORIDE ETCH MORPHOLOGIES USING
SILICA GEL. (U)

DESCRIPTIVE NOTE: Technical rept.,
SEP 67 57P Ives, M. B. ; McElroy, R.

O. ;

REPT. NO. TR-10

CONTRACT: Nonr-3925(00)

UNCLASSIFIED REPORT

DESCRIPTORS: (*LITHIUM FLUORIDES, *ETCHED CRYSTALS),
(*SILICA GEL, ETCHING), MICROSTRUCTURE, ELECTRON
MICROSCOPY, IRON, INHIBITION, CRYSTAL STRUCTURE,
DISLOCATIONS, CANADA (U)
IDENTIFIERS: ETCHANTS (U)

Cleavage surfaces of lithium fluoride were etched
on a silica hydrogel containing ferric ions as
inhibitor. The dissolution etch pits and features
were examined by interference and electron
microscopy. The ledge structure of pits thus
formed is very regular. It is proposed that the
gel eliminates turbulence in the system and retards
the diffusion of ferric ions towards the dissolving
interface. An explanation for the observed
rounding of pits at very high inhibitor concentration
is proposed. (Author) (U)

AD- 661 042

UNCLASSIFIED

PAGE 105

AD- 660 381

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 658 947 9/1 14/4

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J ELECTRONIC COMPONENTS LAB

INCREASED RESISTANCE OF CRYSTAL UNITS AT OSCILLATOR NOISE LEVELS, (U)

APR 67 3P Bernstein, M. ;

UNCLASSIFIED REPORT

Availability: Published in Proceedings of the IEEE V55 n7 p1239-41 Jul 1967.

DESCRIPTORS: (*QUARTZ RESONATORS, DEFECTS(MATERIALS)), SURFACE PROPERTIES, ETCHING, RELIABILITY(ELECTRONICS), NOISE(RADIO), CRYSTAL OSCILLATORS, ELECTRICAL RESISTANCE (U)

Problems have been experienced with inoperative military equipment which have been traced to a defect in some quartz crystal units. This defect has been determined to be an increase in resistance (loss of Q) of crystal resonators when excited at very low power levels. The typical crystal oscillator, when first turned on, excites the resonator with thermal noise and consequently the power dissipated is very small. Simple instrumentation has been assembled to show clearly the low power increased crystal resistance effect. Tests have shown that surface defects, due to the final lapping process, contribute to the problem. The necessity of surface etch to remove the damaged surface layer is shown to be required to avoid defective crystal units. (Author) (U)

AD- 658 947

UNCLASSIFIED

PAGE

106

AD- 658 248

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 658 248 20/2 7/4 9/5

CALIFORNIA UNIV BERKELEY DEPT OF ELECTRICAL ENGINEERING

THE GROWTH AND ETCHING OF SI THROUGH WINDOWS IN SiO₂ (U)

67 10P Oldham, W. G. ; Holmstrom, R.

CONTRACT: AF-AFOSR-139-65

PRJ: AF-4751

MONITOR: AFOSR 67-2086

UNCLASSIFIED REPORT

Availability: Published in Journal of the Electrochemical Society V114 n4 p381-8 Apr 1967.
DESCRIPTORS: (*SILICON, *CRYSTAL GROWTH), (*ETCHING, SILICON), VAPOR PLATING, SILICON DIOXIDE, FILMS, MASKING, DIFFUSION, CONCENTRATION(CHEMISTRY), ETCHED CRYSTALS, INTEGRATED CIRCUITS, PREPARATION (U)

A theory of the kinetics of vapor deposition and etching through small openings in an oxide layer on Si is developed and compared with experiments. A model that assumes equilibrium at the Si surface and purely diffusive transport through the gas phase is used to derive the concentrations and fluxes of the interesting gaseous species in the neighborhood of the window. The previously reported concave growth surfaces and convex etching surfaces are explained by the constriction of the flow near the edges of the windows. The measured etch rate is in quantitative agreement with theoretical estimates based on this model. Furthermore, the derived concentration profiles explain the appearance and relative size of the band of oxide free from Si overgrowth which surrounds each window in the growth experiments. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 655 098 20/6 14/2

JOHNS HOPKINS UNIV BALTIMORE MD LAB OF ASTROPHYSICS AND
PHYSICAL METEOROLOGYDEVELOPMENT OF DIFFRACTION GRATINGS FOR THE FAR
ULTRAVIOLET. (U)DESCRIPTIVE NOTE: Final rept. 1 Apr 64-31 Mar 67.
APR 67 16P McCellan, J. P.; Strong.John :
CONTRACT: AF 19(628)-4077
PROJ: AF-6608
TASK: 668801, 66880102
MONITOR: AFCRL 67-0294

UNCLASSIFIED REPORT

DESCRIPTORS: (*DIFFRACTION GRATINGS, MANUFACTURING),
(*SPECTRUM ANALYZERS, ULTRAVIOLET SPECTROSCOPY), GLASS,
ETCHING, ION BOMBARDMENT, ULTRASONIC RADIATION, DESIG(U)

Work on procedures of ruling gratings for the far ultraviolet is reported in the following areas:

- (1) Ruling tools other than diamond. (2) Improvements in tool shape and lubrication.
- (3) Ruling properties of glass surfaces--fine polish versus pitch and felt polish; and composition.
- (4) Resists and management of etching by ultrasonic agitation. (5) Etching by ion bombardment. (6) Interpretation of electron microphotographs of grating grooves. (Author)

(U)

AD- 655 098

UNCLASSIFIED

PAGE

107

AD- 654 427

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMC9

AD- 654 427 9/5 13/8

JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB

THIN FILM CIRCUIT TECHNIQUES. (U)

SEP 60 25P BYRON, Ernest ;
REPT. NO. CF-2884
CONTRACT: NORD-7386

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIRCUITS, FILMS), MASKING, MANUFACTURING,
ETCHING, SUBSTRATES (U)

A primary practical problem in the fabrication of thin film circuits is the development of a mask changer. If entire circuits are to be fabricated with dispatch, registration of numerous masks without 'breaking' the vacuum is necessary. This report deals with the fabrication of a 5 x 5 resistance matrix requiring four masks. The matrix although merely a vehicle for the design of a mask changer, required alignment of successive masks to within 5 mils without evacuating the chamber between each deposition. In addition to the matrix, capacitors of the order of 0.047 microfarads per sq. inch and associated topics such as masking, etching, substrates, and materials are also considered.

(U)

AD- 655 098

UNCLASSIFIED

PAGE

107

AD- 654 427

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 654 305 20/2

TYCO LABS INC WALTHAM MASS

THE INVESTIGATION OF SILICON CARBIDE BY A TRAVELLING
SOLVENT METHOD. (U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 65-31 Jan 67.

APR 67 77p Wolff, G. A. ; Das, B. N. ;

CONTRACT: AF 19(628)-4384

PROJ: AF-4608

TASK: 460805

MONITOR: AFCL 67-0271

UNCLASSIFIED REPORT

DESCRIPTORS: (*SILICON CARBIDES, CRYSTAL STRUCTURE),
CRYSTAL GROWTH, CRYSTALLIZATION, ETCHING, ETCHED
CRYSTALS, SOLVENTS, EPITAXIAL GROWTH, ALLOYS, X RAY
DIFFRACTION, CRYSTAL DEFECTS (U)

IAC ACCESSION NUMBER: MCIC-004757

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The crystallization of SiC from molten alloy mixtures of Cr-SiC, Cr₅-Si₃-SiC, and CrSi₂-SiC of varying compositions was investigated. The resulting crystals were analyzed for their polytype structure and crystal morphology. Cubic (beta) SiC was obtained preferably from dilute solutions in molten Cr₅Si₃ when rapidly cooled. The amount of alpha-SiC increased for slower cooling rates; it was also greater for the other alloy mixtures. Structure identification was achieved by X-ray precession methods and by crystal morphology analysis. Etching in ClF₃ gas at 400 C was used for the determination of polarity of SiC deposited from either molten alloy or from CH₃SiCl₃-H₂ gaseous mixtures. This etch proved superior to previously used conventional etches in surface and dislocation studies. Epitaxial deposition was studied in detail with respect to substrate influence and structure propagation. Considerations on the crystal growth mechanism and on necessary requirements as dictated by morphology conditions are presented. It is stated that crystal growth and desired polytype formation can be well monitored by proper control of growth conditions as derived from morphology considerations, if it can be done at all. (U)

AD- 654 305

UNCLASSIFIED

PAGE

108

AD- 653 628

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 653 628 9/5 17/9

TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR-COMPONENTS
DIV

INTEGRATED CIRCUITS FOR PORTABLE RADAR
EQUIPMENT. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 4, 1 Dec 66-28

Feb 67,

JUN 67

38P

Teague, E. Clayton ; Watelski,
Stacy B. ; Dennis, Charles F. ; Sharif, Louay ;

REPT. NO. 03-67-31

CONTRACT: DA-28-043-AMC-02029(E)

PROJ: DA-1E6-22001-A-440

TASK: 1E6-22001-A-44003

MONITOR: ECOM 02029-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-650 040.

DESCRIPTORS: (*INTEGRATED CIRCUITS, *RADAR EQUIPMENT),
PORTABLE EQUIPMENT, GALLIUM ARSENIDES, GERMANIUM,
EPITAXIAL GROWTH, ETCHING, DEPOSITION, ELECTRICAL
RESISTANCE (U)

The results of experiments on factors determining the surface structure and topography of the germanium growth front during selective etch and deposition in GaAs are summarized. Experimental data have been obtained which show that preferential growth near the pocket edges can be eliminated by partially refilling the etched regions. The surface topography of the selectively deposited germanium is determined primarily by the substrate temperature and the GeCl₄ concentration. The device to be fabricated in the Ge pockets is described. (Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 653 335 7/2 8/7

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J INST FOR
EXPLORATORY RESEARCH

MORPHOLOGICAL FEATURES OF HEXAGONAL FERRITES, (U)

DEC 66 13P Cook, Charles F. . Jr.; Nye,
William F. ;

UNCLASSIFIED REPORT

Availability: Published in Materials Research

Bulletin v2 p1-12 1967.

SUPPLEMENTARY NOTE: Presented at the International
Conference on the Characterization of Materials,

State Coll., Pa., November 16-18, 1966.

DESCRIPTORS: (*FERRITES, *MORPHOLOGY(BIOLOGY)), ELECTRON
MICROSCOPY, MAGNETIC PROPERTIES, SINGLE CRYSTALS,
CRYSTAL STRUCTURE, PHASE STUDIES, CRYSTAL DEFECTS,
SAMPLING, CRYSTAL GROWTH, PHOTOMICROGRAPHY, ETCHING,
THICKNESS, ERRORS, DATA, MEASUREMENT (U)Depression growth spirals and vicinal-hill type
spirals have been discovered on basal faces of single
crystal hexagonal ferrite samples. Electron
microscopy studies have resolved sub-unit-cell etch
steps on 'process etched' and on HCl etched
surfaces. A variety of crystalline imperfections
have been noted and etch pit studies have indicated
the number and kinds of dislocations present.
(Author) (U)

AD- 653 335

UNCLASSIFIED

PAGE

109

AD- 652 300

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 652 300 20/12 7/4 20/2

MISSOURI UNIV ROLLA

ANODIC BEHAVIOR OF GAAS SINGLE CRYSTALS AT INCREASED
CURRENT DENSITIES IN ALKALINE AND ACIDIC
SOLUTIONS. (U)DESCRIPTIVE NOTE: Technical rept.,
MAY 67 9P Krumme, J. -P. ; Straumanis,
M. E. ;

REF. NO. TR-16

CONTRACT: Nonr-2296(03)

UNCLASSIFIED REPORT

Availability: Published in Transactions of the
Metallurgical Society of AIME v239 p395-402 Mar
1967.DESCRIPTORS: (*GALLIUM ARSENIDES, ELECTROLYSIS),
(*ETCHING, GALLIUM ARSENIDES), SINGLE CRYSTALS,
ELECTROCHEMISTRY, CRYSTAL STRUCTURE,
SOLUTIONS(MIXTURES), BASES(CHEMISTRY), ACIDS, CRYSTAL
LATTICES, SURFACES, POROSITY, SYMMETRY(CRYSTALLOGRAPHY),
CHEMICAL BONDS, ETCHED CRYSTALS, SEMICONDUCTORS (U)Electrolytic treatment of smooth surfaces of poly-
and single-crystalline GaAs at high anodic
current densities causes the formation of porous
surface layers. The purpose of the paper is to
explore and to explain the reasons for the formation
of such surface layers on GaAs and, in
particular, to investigate the influence of the
lattice polarity of this III-V compound
semiconductor in the (111) direction on the
anodic dissolution behavior. (U)

AD- 653 335

UNCLASSIFIED

PAGE

109

AD- 652 300

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 650 977 9/1

JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS LAB

A MINIATURE MONOSTRIP NANOSECOND PULSE DELAY LINE, (U)

JUN 63 25P Gordon, Stanley H. ;

REPT. NO. CF-3034

CONTRACT: N0W-62-0604

UNCLASSIFIED REPORT

DESCRIPTORS: (*DELAY LINES, MICROELECTRONICS), DIELECTRICS, SILICONE PLASTICS, TITANIUM COMPOUNDS, DIOXIDES, COPPER, ALUMINA, ELECTROMAGNETIC PULSES, MANUFACTURING, PHOTOENGRAVING, ETCHING (U)

The miniature monostrip pulse delay line described are smaller, lighter and more rugged than the equivalent coaxial line. They can be fabricated in many form factors and can be made to operate in extreme environments of near absolute zero temperature to over 1000C. Standard photographic plating and etching techniques are employed in the fabrication of these lines and the techniques are easily adapted to economical production procedures. The electrical design of the monostrip line is quite simple and flexible and almost any reasonable desired characteristic can be designed into the delay line. (Author) (U)

AD- 650 977

UNCLASSIFIED

PAGE

:10

AD- 647 160

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 647 160 14/5 9/5

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J INTEGRATED ELECTRONICS DIV

DURABLE CHROMIUM MASKS FOR PHOTORESIST APPLICATIONS. (U)

DESCRIPTIVE NOTE: Revised ed., MAY 66 1P Rogel, Alex ;

UNCLASSIFIED REPORT

Availability: Published in The Review of Scientific Instruments v37 n10 p1416 Oct 1966. SUPPLEMENTARY NOTE: Revision of manuscript submitted 22 Mar 66.

DESCRIPTORS: (*METAL FILMS, *PHOTOENGRAVING), CHROMIUM, FILMS, CIRCUITS, SUBSTRATES, VAPOR PLATING, ETCHING IDENTIFIERS: THICK FILMS (U)

Chemically pure chromium powder was melted under vacuum in a carbon crucible in a standard MRC EVD 96 BJ electron beam vapor deposition unit. Thorough cleaning of the microscope slides first in detergent, then ultrasonically in acetone, alcohol, and distilled water, proved to be of utmost importance for achieving Cr films free of pinholes. Outgassing of the source was then performed at a beam setting of 0.5 kV and 50 mA before opening the shutter for the deposition cycle. Most satisfactory 3000 A films with good adherence were obtained during 45 min evaporation time at a beam setting of 100 mA and 1 kV. The substrate was not directly heated before or during evaporation. Before etching, these films were coated with Photoresist Kodak KPR. The desired patterns were then exposed to ultraviolet light and developed. Chromium films of 3000 A thickness were etched within a 2 min period. After etching, the photoresist was removed, and the slide was heated for 10 min at 400C. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 646 957 20/12 20/3

OXFORD UNIV (ENGLAND) ENGINEERING LAB

FIELD EMISSION FROM CADMIUM SULPHIDE, (U)

NOV 66 3P Husain, S. A.; Walsh, D. ;
 CONTRACT: AF-EDAR-37-65
 PROJ: AF-9767
 TASK: 976702
 MONITOR: AFOSR 67-0317

UNCLASSIFIED REPORT

Availability: Published in Electronics Letters
 v2 n12 n.p. Dec 1966.

DESCRIPTORS: (*CADMIUM SULFIDES, *FIELD EMISSION),
 SINGLE CRYSTALS, ETCHING, ETCHED CRYSTALS (U)

A technique for etching fine field emitters of CdS single crystals was developed. Relatively high field-emission currents at low voltages were obtained (typically 0.000001A at 2kV). The results, when plotted, agree with the Fowler-Nordheim equation, with deviations at currents above 10 to the minus 7th power A and below 10 to the minus 9th power A. Possible explanations of the deviations are discussed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 645 201 13/8 11/6

STANFORD RESEARCH INST MENLO PARK CALIF

GASEOUS PRECISION ETCHING OF MOLYBDENUM. (U)

DESCRIPTIVE NOTE: Technical rept.,
 NOV 66 38P Preist, Ruth C. ;
 CONTRACT: Nonr-2887(00)
 PROJ: SRI-2863

UNCLASSIFIED REPORT

DESCRIPTORS: (*METAL FILMS, MOLYBDENUM), (*MOLYBDENUM, ETCHING), GASES, PRECISION FINISHING, OXYGEN, HYDROGEN COMPOUNDS, CHLORIDES, MACHINING, OXYCHLORIDES (U)
 IDENTIFIERS: THICK FILMS (U)

Reactions which lead to the solution or volatilization of molybdenum and which are suitable for high-precision etching of patterns in thin films of molybdenum are not well known. In a search for a process for etching cavities in films 1mu thick it has been found that the formation and simultaneous removal of molybdenum trioxide can be achieved by exposure of heated molybdenum films to a mixture of oxygen and hydrogen chloride gases. Etch rates of 1000 to 10,000 A/min have been obtained with specimen temperatures of 400 to 600C and with gas pressures between 0.1 and 1 torr. An etch factor of about 2 has been typical, and the final etched surface has been as smooth if not smoother than the original surface. Aluminum oxide of about 0.1mu thickness has been used as a resist. It is hoped that an electron-exposed organic resist can eventually be adapted for use with this process. Discussion and speculation on the mechanism of formation of the oxide and its removal have been included, as well as discussion of some of the factors which are important in predicting the optimum conditions for etching. A residue of a very thin, adherent layer of MoO2 on partially etched molybdenum surfaces has been a problem, and means for removing this film are discussed. The process appears to have promise for etching with dimensional control accurate to better than 0.1mu in films 1mu thick. Greater precision may be possible in films thinner than 1mu. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 645 047 9/5 20/12

TEXAS INSTRUMENTS INC DALLAS SEMICONDUCTOR-COMPONENTS DIV

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 2, 1 Jun-31 Aug 66.

DEC 66 43P Tague, E. Clayton ;

REPT. NO. 11-03-66-130

CONTRACT: DA-28-043-AMC-02020

PROJ: DA-1EG-22001-A-440

TASK: 1EG-22001-A-440-03

MONITOR: ECON 02029-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, *RADAR EQUIPMENT), PORTABLE EQUIPMENT, GALLIUM ARSENIDES, ETCHING, VAPOR PLATING, EPITAXIAL GROWTH, GERMANIUM COMPOUNDS, CHLORIDES (U)

Experimental results, and a theoretical description for vapor etching GaAs with HCl in H₂ and H₂ + AsH₃ gas mixtures, are presented. Optical microscopy and surface profile studies of various surfaces have been performed to relate the initial substrate surface to the resulting germanium growth surface. These surface studies were made for selective and non-selective etch and deposition processes. (Author) (U)

AD- 645 047

UNCLASSIFIED

PAGE

112

AD- 644 652

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 644 652 11/6 20/2

LEHIGH UNIV BETHLEHEM PA DEPT OF METALLURGY AND MATERIALS SCIENCE

REPLICATION OF FINE STRUCTURE IN MARTENSITE. (U)

APR 66 2P Shapiro, S. ; Krauss, G. ;
MONITOR: AR0D 4806:1

UNCLASSIFIED REPORT

Availability: Published in Transactions of the Metallurgical Society of AIME v236 p1371-3 Sep 1966.

DESCRIPTORS: (*MARTENSITE, MICROSTRUCTURE), (*METALLOGRAPHY, MARTENSITE), ETCHING, TRANSFORMATIONS, ELECTRON MICROSCOPY, AUSTENITE, ETCHED CRYSTALS, DENSITY (U)

Recent investigations of the products of martensitic transformation in Fe-Ni and Fe-Ni-C alloys have made use of light microscopy to describe martensitic fine structure. The application of conventional metallographic techniques to this problem was possible because of the similarity of distributions of parallel striations developed by etching polished surfaces to distributions of transformation twins which are positively identified in thin films by transmission electron microscopy. The surface striations frequently are not well-defined, and could also be due to, for example, rows of etch pits which are not resolved by the light microscope. This note describes the etching effects revealed by examination of surface replicas of martensite in the electron microscope. The application of a replica technique both extends the observations of fine structure made with the light microscope and allows the results of conventional metallography to be used with more confidence. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 643 540 18/4

NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF

A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS.(U)

DEC 66 32P Tochilin,Eugene ;Pretre,S. ;
Goldstein,Norman ;
REPT. NO. USNTRDL-TR-1089

UNCLASSIFIED REPORT

DESCRIPTORS: (*NEUTRON DETECTORS, DESIGN), (*NEUTRON FLUX, MEASUREMENT), NUCLEAR ENERGY, NUCLEAR CROSS SECTIONS, SENSITIVITY, DAMAGE, RADIATION EFFECTS, FISSION PRODUCTS, PLASTICS, COUNTING METHODS, ETCHING (U)

A neutron detector is described which consists of a fission foil (232Th, 235U, 238U, 237Np or 239Pu) in contact with a plastic track detector. These detectors were exposed to reactor neutrons and to monoenergetic neutrons with energies between 1.0 - 18 MeV. Fission fragment tracks registered in the plastic were selectively etched by an hydroxide and counted in an optical microscope. For thick foils of fissionable metals the sensitivity of the system was found to be (1.16 plus or minus 3%) X 10 to the minus 5th power fission fragment tracks/neutron - barn which is in good agreement with theoretical calculations. This sensitivity is independent of the fissionable element used, independent of the neutron energy, fairly independent of the material chosen for track registration (plastics, glass, mica) and of etching conditions. Since the (n,f) cross sections are accurately known for most neutron energies, the above constant can also be used for standardized measurements of neutron fluences. (U)

AD- 643 540

UNCLASSIFIED

PAGE

13

AD- 642 794

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT, BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 642 794 18/4

NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF

RANGE AND DEPTH DOSE DISTRIBUTION OF LOW ENERGY CHARGED PARTICLES IN DOSIMETRY GLASSES. (U)

OCT 66 23P Becker,K. ;
REPT. NO. USNRDL-TR-1088
PROJ: SF-011-05-11
TASK: 0503

UNCLASSIFIED REPORT

DESCRIPTORS: (*DOSIMETERS, GLASS), (*DOSE RATE, MEASUREMENT), (*ETCHING, DOSIMETERS), NUCLEAR PARTICLES, NUCLEAR ENERGY LEVELS, LUMINESCENCE, ETCHING, PROTONS, DEUTERONS, ALPHA PARTICLES, ERRORS, RADIATION MEASURING INSTRUMENTS (U)

A new method for the direct determination of particle ranges and depth dose distributions in silver-activated phosphate glasses is based on the successive removal of extremely thin surface layers from the exposed glass by chemical etching ('peeling') and measurement of the residual radiophotoluminescence between successive etchings. Glass composition, etching chemicals and etching speed can be varied within wide limits. The experimental technique, using Yokota-type dosimeter glasses and 28% NaOH at 60C (etching speed 0.12 microns/min.) is briefly described. As examples for the practical application of the method, measurements using several types of radiation sources (aqueous solutions of 3H, 63Ni and 35S, solutions and thin and thick solid sources of 239Pu, 237Np and 235U, monoenergetic protons, deuterons and He(+) ions in a wide energy range) were made. Accuracy, possibilities and limitations of the method are briefly discussed. Possible sources of error are: discoloration of the glass because of very high surface doses; uncertainties in the determination of the etching speed; etching speed along charged particle tracks higher than the bulk etch rate for ions of very high LET. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 642 425 9/1 13/8

BULOVA WATCH CO INC WOODSIDE N Y ELECTRONICS DIV

PRODUCTION ENGINEERING MEASURE FOR TYPE CR-(XW-60)/U
CRYSTAL UNITS. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 8, Apr-Jun 66,
JUN 66 18P Dance, M.;
CONTRACT: DA-36-039-AMC-03633(E)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-633 688.

DESCRIPTORS: (*QUARTZ RESONATORS, MANUFACTURING),
CRYSTAL HOLDERS, WELDING, QUALITY CONTROL, LOW
FREQUENCY, VAPOR PLATING, VACUUM APPARATUS,
RELIABILITY(ELECTRONICS), ETCHING, ETCHED CRYSTALS,
QUARTZ (U)

Resistance welding as a means of lead attaching is
not recommended for center mounted crystal units
since pull test values are much too low. The
method does not show any merit which would warrant
further investigations at this time. Ultrasonic
welding of leads to the blank is the only method
which has not been fully investigated. Thermo-
compression bonding and resistance welding was
investigated to the point where they were shown to be
not suitable methods of attaching center leads to low
frequency crystal units. In general their pull
test values are too low. Vacuum final plating can
be done successfully on low frequency crystal units
provided extreme accuracy is taken in the lapping and
etching of the crystal leaves to frequency.
(Author) (U)

AD- 642 425

UNCLASSIFIED

PAGE 114

AD- 642 040

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 642 040 20/2

AIR FORCE CAMBRIDGE RESEARCH LABS 1 G HANSCOM FIELD
MASS

CRYSTAL PERFECTION OF ALPHA-AL2O3 AS A FUNCTION OF
GROWTH METHOD. (U)

DESCRIPTIVE NOTE: Physical sciences research papers,
SEP 66 38P Sahagian, Charles S.;
REPT. NO. AFRL-PSRP-268 , AFRL-66-659
PROJ: AF-5620
TASK: 562005

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at General Assembly
(7th), International Congress and Symposium,
International Union of Crystallography, Moscow,
Jul 66. (U)

DESCRIPTORS: (*RUBY, CRYSTAL DEFECTS), (*SAPPHIRE,
CRYSTAL DEFECTS), CRYSTAL GROWTH, ETCHING, ALUMINUM
COMPOUNDS, OXIDES

IAC ACCESSION NUMBER: MCIC-004157

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Synthetic ruby and sapphire crystals grown by
flame-fusion and flux methods are described and
discussed in terms of growth method and growth
techniques. Dislocation densities are given for
all samples, and comparisons are made in an attempt
to obtain correlation between the growth method used
and the resulting lattice defect structure. Data
are presented for crystals grown by various methods,
namely, Verneuil, flux, hydrothermal, electron-beam
zone refining, Czochralski, vapor deposition, and
plasma torch methods. Dislocation density
evaluation is based on chemical etchpit analysis,
which produced average dislocation density values
varying from about 1,000,000/sq cm for crystals grown
by the plasma torch method to about 1000/sq cm for
crystals grown by the electron-beam method.
Crystals grown by the other methods mentioned about
show dislocation densities lying between these
values. A brief description is presented of the
chemical etching techniques and apparatus used at
AFRL. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 641 500 11/2 11/4

STATE UNIV OF NEW YORK STONY BROOK DEPT OF MATERIALS
SCIENCE

MECHANISMS OF ATTACK ON GLASSES IN AQUEOUS
MEDIA. (U)

DESCRIPTIVE NOTE: Interim scientific rept., 1 Jun-20
Sep 66.
SEP 66 70r Levine, Sumner N. : LaCourse,
William C. :
CONTRACT: Nonr-4803(00)

UNCLASSIFIED REPORT

DESCRIPTORS: (*GLASS TEXTILES, SURFACE PROPERTIES),
ETCHING, ACIDS, MICROSTRUCTURE, PHASE STUDIES, CHEMICAL
REACTIONS, SILICON COMPOUNDS, BORON COMPOUNDS, OXIDES,
CORROSION, COMPOSITE MATERIALS (U)

IAC ACCESSION NUMBER: PL-009562
IAC DOCUMENT TYPE: PLASTIC -HARD COPY--

As part of a program concerned with the influence
of surface properties of glass on the behavior of
reinforced plastics, we report here on an electron
microscope study of aqueous attack on glass.
Micrographs of E and 994 glasses, treated in
solution of pH 2 through 11, are shown and a
discussion of these micrographs is given. The
effects of large scale phase separation in these
glasses are discussed and plausible mechanisms for
aqueous attack on these glasses are given. A
detailed discussion of glass structure and a survey
of earlier work on chemical attack is given in the
introduction. An alternative approach to the boron
oxide anomaly is also suggested. (Author) (U)

IAC SUBJECT TERMS: P--(U)SEM, Fiberglass E,
Surface chemistry, Chemical resistance, ZZ
Unlimited.:

AD- 641 500

UNCLASSIFIED

PAGE 115

AD- 639 068

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 639 068 9/5

BUNKER-RAMO CORP CANOGA PARK CALIF DEFENSE SYSTEMS
DIV

PLANAR COAXIAL INTERCONNECTION TECHNIQUES. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 1, 1 Apr-30 Jun
66.
SEP 66 41P Parks, H. L. : Smith, C. W. :
Oider, R. B. :
REPT. NO. F-058,
CONTRACT: DA-28-043-AMC-02024(E),
PROJ: DA-IE6-22001-A440,
TASK: IE6-22001-A440-01,
MONITOR: ECOM 02024-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*CIRCUIT INTERCONNECTIONS, MANUFACTURING),
MICROELECTRONICS, ALUMINUM ALLOYS, LAMINATES, METAL
PLATES, ETCHING (U)

The object of this work is the development of
planar coaxial interconnection techniques that
integrate the batch fabrication advantages of printed
circuits with the electrical characteristics of
point-to-point coaxial wiring by forming coaxial
conductors within laminated aluminum plates.
Analyses and investigations have been completed on
three types of aluminum, eight types of surface
preparation, and two types of photo resist; in
addition, several combinations of etch solutions and
etch times have been studied. Work to date
indicates that the aluminum surface can be prepared
by mechanical sanding, followed by trichloroethylene
vapor cleaning; with this approach, Kodak KMER or
KPR is used as the photo resist, 22 degree Baume
ferric chloride is used as the etchant, and alloy
1100 aluminum is used as the substrate. An
alignment tool, for punching holes in photographic
film masks and the aluminum plates to an accuracy of
0.0001 inch, has been fabricated and is being
investigated. Results obtained indicate that
channels can be etched into aluminum plates with
depths controlled to an accuracy of 0.5 mil, that
cavity widths can be etched to within plus or minus
1.0 mil, and that the etched channel linearity can be
held to within plus or minus 0.3 mil. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 637 803 20/2

PERIN-ELMER CORP NORWALK CONN

THE PREPARATION OF ORIENTED SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE RARE EARTH AND
IRON GROUP METALS. (U)

DESCRIPTIVE NOTE: Technical rept.. 1 Oct 64-30 Sep 65.

NOV 65 32P Nester,James F. ;

CONTRACT: AF 33(657)-11282,

PROJ: AF-7371,

TASK: 737103,

MONITOR: AFML TR-65-390

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SINGLE CRYSTALS, SPHERES),
(*INTERMETALLIC COMPOUNDS, *CRYSTAL GROWTH), NEODYMIUM
ALLOYS, COBALT ALLOYS, YTTERBIUM ALLOYS, TEMPERATURE
CONTROL, IMPURITIES, BAND THEORY OF SOLIDS, REFRACTORY
MATERIALS, CRYSTAL STRUCTURE, SYMMETRY(CRYSTALLOGRAPHY),
ETCHING (U)
IDENTIFIERS: YTTERBIUM ALLOYS (U)

IAC ACCESSION NUMBER: MCIC-065494

IAC DOCUMENT TYPE: MCIC -HARD COPY--

Using minor modifications of a process previously
developed (see AD-611 430), single crystal
spheres up to 2 mm in diameter of Nd2Co17 and
Y2Co17 were prepared. Details of the
experimental work are presented. Attempts to find
a suitable automatic temperature control scheme for
the process were unsuccessful. As a result,
impurity 'banding' of the zone-melted ingots remained
a problem throughout the program and caused a lack of
reproducibility in crystal growth experimental
results. The ceramic material 'Lucalox' was
found to be at least as suitable as Morganite
alumina for use as a crucible material with rare
earth-iron or cobalt melts. Efforts to orient the
single crystal spheres by an optical Laue technique
were unsuccessful, primarily because of the inability
to consistently produce well-formed etch features
exhibiting recognizable symmetry on the crystals.
Etchant techniques tried included chemical
etchants, thermal etching in air, and cathodic
sputtering. (U)

AD- 637 803

UNCLASSIFIED

PAGE 116

AD- 637 114

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 637 114 9/1 13/8

MOTOROLA INC PHOENIX ARIZ SEMICONDUCTOR PRODUCTS DIV

PRODUCTION ENGINEERING MEASUPE FOR SILICON NPN
SWITCHING TRANSISTORS. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 2, 25
Aug-25 Nov 65.

NOV 65 23P Steinmann,Charles ;Freese,

Jack ;

CONTRACT: DA-36-039-AMC-06164(E),

PROJ: 26072,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-627 823

DESCRIPTORS: (*TRANSISTORS, MANUFACTURING), (*ELECTRONIC
SWITCHES, TRANSISTORS), SILICON, PHOTODETCHING, DOPING,
ETCHING, DIFFUSION, OXIDES, ALUMINUM COATING, ASSEMBLY,
PACKAGING, RELIABILITY(ELECTRONICS), QUALITY CONTROL,
ULTRASONIC WELDING (U)

An increase in bandwidth resulted in improved beta
and breakdown voltage range control. Diffusion
time, temperature, and gas flow variations was
studied and show no adverse variation. A change in
oxide etching solution and temperature resulted in
increased photoresist yields. Test of KMER
versus KTR emulsions have shown KMER to be
superior in small pattern processing. The cause of
discolored aluminum metallization was traced to the
presence of oxygen in the evaporator. Installation
of an ultrasonic wire bonder and in-process quality
assurance wire bond inspection proved to be valuable
in increasing assembly yields. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 637 020

9/1

13/8

RAYTHEON CO MOUNTAIN VIEW CALIF SEMICONDUCTOR
OPERATIONS

SILICON, PNP, MEXA TRANSISTOR, TYPES 2N328A JAN AND
2N329A JAN. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 1, 29 Nov
65-28 Feb 66.
FEB 66 Chien, Frank ; Wiesner, Sidney

CONTRACT: DA-36-039-AMC-06172(E).

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-636 762.
DESCRIPTORS: (*TRANSISTORS, SILICON), MANUFACTURING,
RELIABILITY(ELECTRONICS), DIFFUSION, EPITAXIAL GROWTH,
ETCHING, DISKS, DIBORANES (U)

A PERT Analysis and Gantt Chart Schedule of
the entire program have been prepared and accepted.
Required facilities have been obtained, installed,
and are now operative. This being the initial
progress report, brief descriptions of original
processes and the proposed process improvements are
presented. Experiments in isolation diffusion and
spray etching have been initiated and evaluated by
Reliability Assurance. The results are
encouraging. (Author) (U)

AD- 637 020

UNCLASSIFIED

PAGE

117

AD- 636 762

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 636 762

9/1

RAYTHEON CO MOUNTAIN VIEW CALIF SEMICONDUCTOR
OPERATIONS

SILICON, PNP, MEXA TRANSISTOR TYPES JAN 2N328A AND
JAN 2N329A. (U)

DESCRIPTIVE NOTE: Quarterly progress prot. no. 2, 1 Mar-
29 May 66.
MAY 66 Chien, Frank ; Wiesner, Sidney

CONTRACT: DA-36-039-AMC-06172(E).

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*TRANSISTORS, SILICON), MANUFACTURING,
RELIABILITY(ELECTRONICS), DIFFUSION, EPITAXIAL GROWTH,
DISKS, ETCHING (U)

Experimental lot of MEXA Transistors
incorporating the following programmed process
improvements were fabricated in the engineering
laboratory and submitted for reliability evaluation.
The subtle epitaxial wafer material problem
encountered during the first quarter of performance
was corrected by the application of replacement
material, i.e., wafers from a subsequent lot of
purchased material which precluded channeling.
Recurrence of the difficulty is expected to be
avoided by qualifying each material shipment prior to
production until material confidence has been
restored. The evaluation results of Lots A
through H incorporating the Isolation
Diffusion and Spray Etch process improvements
indicate substantial improvement in device
reliability. Lots I through M are now being
evaluated for reliability results. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 635 828

13/11

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A METHOD OF MAKING MESH FILTERS FROM MATERIALS AND ALLOYS. (U)

MAY 66 6P Chevashova, K. L. ;
REPT. NO. FTD-HT-66-189,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of Patent (USSR) 134 092, appl. 659186/22, 18 Mar 60.
 DESCRIPTORS: (*FLUID FILTERS, PATENTS), METALS, ALLOYS, USSR, ETCHING, ELECTROLYSIS, HYDROCHLORIC ACID, METAL FILMS, FOILS(MATERIALS), SOLVENT EXTRACTION (U)

The object of the invention is a method of making mesh filters from metals and alloys by selective anode etching, in solutions of hydrochloric acid or its salts, of initial billet from a foil obtained by rolling or by pressing and sintering metallic powders. To intensify the process and improve the quality of the mesh, electrolysis is conducted under conditions set forth in the disclosure. To obtain a mesh from metals and alloys that cannot be etched (for example, tungsten, molybdenum and tantalum) other metals (for example, zinc, cadmium, iron) that form structural components in the composition of the alloy that are soluble in the selected electrolyte are introduced into the composition of the initial billet. (U)

AD- 635 828

UNCLASSIFIED

PAGE

118

AD- 635 814

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 635 814 9/1 13/8

MOTOROLA INC PHOENIX ARIZ SEMICONDUCTOR PRODUCTS DIV

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 4, 1 Oct-31 Dec 65.

DEC 65 37P Cassidy, Michael ;Greer,Paul

CONTRACT: DA-36-039-AMC-06156(E),
PROJ: DA-7401,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-635 118.
 DESCRIPTORS: (*TRANSISTORS, MANUFACTURING), (*SILICON, TRANSISTORS, DISKS, PREPARATION, BONDING, DIFFUSION, STORAGE, RELIABILITY(ELECTRONICS), ULTRASONIC WELDING, CHEMICAL MILLING, ETCHING, ELECTRIC TERMINALS (U)

Progress during the past quarter has consisted of the following: (1) Wafer Preparation: Processing of 1 1/2-inch slurry-polished and chemically etched wafers using the new preohmic two-step photoresist process. (2) Mask Resolution and Alignment: Vertical and horizontal dimensional inspection of masks to eliminate mask variations. (3) Deionized Water Boil: Evaluation of ultrasonically wire-bonded devices after subjection to deionized water boil. (4) Wire Bonding: Evaluation of units fabricated using a Sono Bond ultrasonic bonder. (5) Diffusion Systems: Final evaluation of the BC13 system. Emitter diffusion employing a controlled PC13 source temperature. (6) Reliability Evaluation: Evaluation of completed units. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 635 143 9/5 13/8 7/5

GENERAL ELECTRIC CO SCHENECTADY N Y RESEARCH AND DEVELOPMENT CENTER

PHOTOMETALLIC PROCESS INVESTIGATION. (U)

DESCRIPTIVE NOTE: Interim development rept. no. 2, 1

Mar-31 May 66.

JUN 66 26P Schaefer, D. L. ;Burgess,J. F. ;

CONTRACT: N00sr-95045.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-631 330.

DESCRIPTORS: (*PHOTOENGRAVING, INTEGRATED CIRCUITS), (*INTEGRATED CIRCUITS, PREPARATION), (*ETCHING, *PHOTOCHEMICAL REACTIONS), GOLD, NICKEL ALLOYS, CHROMIUM ALLOYS, CHLORINE COMPOUNDS, BROMINE COMPOUNDS, IODINE COMPOUNDS, PHOTOCURABLE POLYMERS, SOLVENTS, COMPATIBILITY, SPECTROSCOPY, PHOTOLYSIS, POLYMERS, SOLVENTS, COMPATIBILITY, REACTION KINETICS, MICROELECTRONICS (U)
IDENTIFIERS: NICHROME (U)

The project has as its ultimate objective the fabrication of microminiature circuits in gold, nichrome, aluminum and silica by a process in which these materials are etched directly by a photosensitive material according to an incident light pattern. The evaluation of potential light sensitive halogens was extended. Spectrophotometric studies of chloro, bromo and iodo systems for etching gold were conducted. Etchant products are identified and etching mechanisms are proposed. Studies of the compatibility of polymers, solvents, and photo etchants were conducted. Reaction rate studies were initiated. The production of circuit patterns in gold and nichrome by several photometallic systems was demonstrated. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 634 762 9/1 13/8

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

CHROMIUM MASKS FOR MICROCIRCUITRY. (U)

DESCRIPTIVE NOTE: Technical rept.,

MAY 66 20P

Rogel, Alex ;

REPT. NO. ECOM-2715,

PROJ: DA-1P622001A056,

TASK: 02.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*INTEGRATED CIRCUITS, PHOTOENGRAVING), (*FILMS, CHROMIUM), ETCHING, PROCESSING, ELECTRON BEAMS, VAPOR PLATING, GLASS, SILICON (U)
IDENTIFIERS: THIN FILMS (U)

A method for preparing durable chromium films which may be used as masks in making photoresist patterns for microcircuitry has been developed. Films deposited by this method were found to have excellent adhesion to glass and silicon and produced good uniform and reproducible patterns. A technique for etching chromium films was developed using a photoresist process and an acid and metal etchant. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 634 392 13/8 20/2

NAVAL ORDANCE LAB WHITE OAK MD

POLISHES AND ETCHES FOR TIN TELLURIDE, LEAD SULFIDE,
LEAD SELENIDE, AND LEAD TELLURIDE: SUPPLEMENT. (U)

DESCRIPTIVE NOTE: Final rept. Jun 63-Feb 66,

MAR 66 15P Morr, Marriner K. ;

REPT. NO. NOLTR-66-32.

PROJ: FR-46.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-423 367.
 DESCRIPTORS: (*CHEMICAL MILLING, CRYSTALS), (*ETCHING,
 CRYSTALS), (*ELECTROLYTIC POLISHING, CRYSTALS),
 (*CRYSTALS, PRECISION FINISHING), TIN ALLOYS, TELLURIUM
 ALLOYS, LEAD ALLOYS, LEAD COMPOUNDS, SULFIDES, SELENIUM
 ALLOYS, INTERMETALLIC COMPOUNDS, CRYSTAL DEFECTS (U)
 IDENTIFIERS: LEAD(II) SULFIDE, LEAD TELLURIDE, LEAD
 SELENIDE, TIN TELLURIDE (U)

This report is a continuation of NOLTR 63-156
 (AD-423 367). Together, the two reports present a
 review of chemical and electrolytic polishes and
 dislocation etches for SnTe, PbS, PbSe,
 and PbTe, covering the period from 1907 through
 1965. The present report also describes a new
 polish and a new dislocation etch for tin telluride,
 as well as tests on and improvements in some of the
 polishes reported in earlier publication.
 (Author) (U)

AD- 634 392

UNCLASSIFIED

PAGE

120

AD- 633 601

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 633 601 11/6 11/2

FRANKLIN INST RESEARCH LABS PHILADELPHIA PA

ETCH-PITTING CHARACTERISTICS OF HIGH-PURITY
MOLYBDENUM. (U)

DESCRIPTIVE NOTE: Interim technical rept.,

JUL 65 38P

REPT. NO. I-82195-1, Prekel, H. L. ; Lawley, A. ;

CONTRACT: Nonr-4434(00).

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
 DESCRIPTORS: (*MOLYBDENUM, ETCHING), DEFECTS(MATERIALS),
 METAL CRYSTALS, CRYSTAL DEFECTS, SINGLE CRYSTALS,
 MICROSTRUCTURE, ELECTRON MICROSCOPY, FOILS(MATERIALS) (U)

The etch-pitting behavior of single and
 polycrystalline molybdenum was examined using various
 etching solutions and prior heat treatments.
 Murakami's solution, Wolff's solution, oxalic
 acid and sulphuric acid in methanol are found

effective on planes in a region 30 degrees about <
 001>, however it is shown that a one to one
 correspondence between etch-pits and dislocations
 does not necessarily exist. A plane about 11
 degrees from <112> towards <012>, which is to
 be the observation plane in the dislocation velocity
 studies, was examined in detail. Reliable and
 reproducible pitting of dislocation sites occurs on
 this plane with a diluted Murakami's solution. A
 one to one correspondence between etch-pits and
 dislocations was positively established by
 transmission electron microscopy of thin foils of
 this orientation etched prior to examination. The
 etch-pit shape depends critically on the crystal
 orientation but is independent of the nature or
 Burgers vectors of the dislocations. Annealing
 of molybdenum single crystals at about 1900 degrees
 C in hydrogen for 8 hours lowers the dislocation
 density from about 10 to the 8th power/sq cm to 1,
 000,000/sq cm as determined from both etch-pitting
 and transmission electron microscopy. The
 dislocation density is reduced by (i) complete
 removal of carbides in the metal matrix (the
 carbides being responsible for the high in-grown
 dislocation density) and (ii) re-arrangement of
 the dislocations into sub-grain boundaries. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD- 633 185 20/12 7/4

LINCOLN LAB MASS INST OF TECH LEXINGTON

CHEMICAL BEHAVIOUR OF SEMICONDUCTORS: ETCHING CHARACTERISTICS. (U)

65 71P Gatos, M. C.; Lavine, M. C.;
 REPT. NO. JA-2092.
 CONTRACT: AF 19(628)-5167, SD-90
 MONITOR: ESD, TR-66-171

UNCLASSIFIED REPORT

Availability: Published in Progress in
 Semiconductors v9 p3-45.

SUPPLEMENTARY NOTE: Prepared in cooperation with
 Massachusetts Inst. of Tech., Cambridge.

DESCRIPTORS: (-SEMICONDUCTORS, CHEMICAL PROPERTIES),
 (-ETCHING, SEMICONDUCTORS), SOLUTIONS (MIXTURES),
 ELECTROCHEMISTRY, SURFACE PROPERTIES, REACTION KINETICS,
 CARRIERS (SEMICONDUCTORS), CRYSTAL DEFECTS, IMPURITIES,
 ELECTROLYTES, FILMS, KINEMATICS, SEMICONDUCTOR DEVICES,
 CHEMICAL BONDS, TRANSPORT PROPERTIES, MICROSTRUCTURE,
 ACIDS, REVIEWS (U)

The chemical properties of semiconductor surfaces are discussed to the extent that they contribute to the nature and applications of chemical etching. Topics include: The dissolution process (general remarks, the electrochemistry of dissolution, carrier-limited kinetics, diffusion-limited kinetics); Some factors affecting chemical etching (surface orientation, surface damage, defects, impurities in semiconductors, impurities in etching electrolytes, surface films); Kinematic consideration of etching; Practical considerations (general remarks, surface preparation, structural characterization, device fabrication); Table of etchants.

(U)

AD- 633 186

UNCLASSIFIED

PAGE

121

AD- 631 330

UNCLASSIFIED

ZOMOS

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOS

AD- 631 330 9/1 13/8

GENERAL ELECTRIC CO SCHENECTADY N Y RESEARCH AND DEVELOPMENT CENTER

PHOTOMETALLIC PROCESS INVESTIGATION. (U)

DESCRIPTIVE NOTE: Interim development rept. no. 1, 1 Dec
 65-28 Feb 66.
 MAR 66 47P Schaefer, Donald L.;
 CONTRACT: N009-95045.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (-MINIATURIZATION (ELECTRONICS),
 MANUFACTURING), PHOTOSENSITIVITY, ETCHING, GOLD,
 ALUMINUM, HALOGEN COMPOUNDS, SULFIDES, CYANIDES,
 SUCCINIMIDES, NICKEL ALLOYS, CHROMIUM ALLOYS, METHANE,
 IODINE COMPOUNDS, IRON COMPOUNDS, CHLORIDES,
 PHOTOCHEMICAL REACTIONS, SILICON COMPOUNDS, DIOXIDES (U)
 IDENTIFIERS: IODOFORM, IRON(III) CHLORIDE, IRON(II)
 CYANIDE/POTASSIUM, NICHROME (U)

The project has as its ultimate objective the fabrication of microminiature circuits in gold, nichrome, aluminum and silica by a process in which these materials are etched directly by a photosensitive material according to an incident light pattern. Potential light sensitive halogens, sulfides and cyanides have been evaluated in liquid solvents. The capability of such materials as photoetchants has been demonstrated. Such materials as iodoform, N-bromosuccinimide, N,N'-dibromodimethylhydantoin, N-chlorosuccinimide, ferric chloride and potassium ferrocyanide show the most promise. Thirtyseven compounds were investigated. Nineteen of these were positive etchants for gold. Eight were positive etchants for nichrome. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 629 644 11/6

WATERTOWN ARSENAL LABS MASS

METALLOGRAPHIC METHODS ETCHING FOR BAINITIC FINE CARBIDES. A METALLOGRAPHIC METHOD FOR REVEALING THE FINE CARBIDES IN BAINITE FORMED DURING CONTINUOUS COOLING IN A NICKEL-CHROMIUM-MOLYBDENUM COMPOSITION. (U)

OCT 48 25P Reed, Everett L. ;Carter.

Harold G. ;

REPT. NO. WAL-132/13.

PROJ: WAL-14.8-U

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ORDNANCE STEEL, METALLOGRAPHY), (METALLOGRAPHY, ORDNANCE STEEL), ETCHING, CARBIDES, BAINITE, NICKEL ALLOYS, CHROMIUM ALLOYS, MOLYBDENUM ALLOYS, TEMPERING (U)

In this investigation a nickel-chromium-molybdenum steel with three carbon contents was selected. These steels are typical of medium heavy armor and certain other ordnance applications. An etching reagent containing 4% picral and 0.01% hydrochloric acid was developed which clearly revealed very fine carbides and their arrangement in bainite formed at low temperatures, whereas other commonly used etching reagents either slightly brought out the very fine carbides or masked them by strongly etching the matrix. The coarser carbides present in bainite formed at high temperatures are shown by the commonly used etching reagents. Tempered bainite was differentiated from tempered martensite after tempering at various temperatures for two (2) hours and after a prolonged tempering for thirty-four (34) hours at 1200 F. (Author) (U)

AD- 629 644

UNCLASSIFIED

PAGE

122

AD- 626 985

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 626 985 9/1 7/2 20/12

RESEARCH TRIANGLE INST DURHAM N C

INTEGRATED SILICON DEVICE TECHNOLOGY. VOLUME X. CHEMICAL/METALLURGICAL PROPERTIES OF SILICON. (U)

DESCRIPTIVE NOTE: Rept. for Oct 64-Oct 65,

NOV 65 190P padnos, B. N. ;

CONTRACT: AF33(615)-1998

PROJ: AF-4159

TASK: 415906

MONITOR: ASD , TDR-63-316-Vol-10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-624 520.

DESCRIPTORS: (*SILICON, PHASE STUDIES), (*SILICIDES, PHYSICAL PROPERTIES), (*SEMICONDUCTOR DEVICES, SILICON), ETCHING, MOLECULAR WEIGHT, CRYSTAL STRUCTURE, DENSITY, SOLUBILITY, ELECTRICAL PROPERTIES, MAGNETIC, THERMAL PROPERTIES, CHEMICAL REACTIONS, PREPARATION (U)

A complete set of existing silicon binary phase diagrams and a complete listing of known binary silicides, along with some of their properties, are presented in convenient reference form. Reactions of silicon with common reagents are summarized, emphasizing those reactions dominant in the chemical etching and polishing of silicon. A technique for spin-etching silicon wafers is also described. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 626 616 9/1

JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LAB

SHORT CUT TO PRINTED CIRCUIT PROTOTYPES. (U)

JAN 59 33P Muccino, F. R. ;

REPT. NO. TG-327

CONTRACT: NO-d-7386

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PRINTED CIRCUITS, MANUFACTURING),
ETCHING, COPPER, LAMINATES

Methods for producing reliable printed circuits for prototype work are discussed. Two methods, based on etching of standard copper-laminate boards are found most practical for small-shop prototypes and are described in detail. The silk-screen process, using hand-cut stencil film is considered better than hand-drawing where several identical circuit boards are needed. Step-by-step use of the silk-screen process is given; it is concluded that the process offers a low-cost way of reproducing accurately more than 200 prints per hour with unskilled hands and minimum equipment. (Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 625 676 9/1 20/6

HP ASSOCIATES PALO ALTO CALIF

SEMICONDUCTOR MATERIALS. (U)

DESCRIPTIVE NOTE: Interim engineering rept. no. 6, 15
Jul-15 Oct 65.

OCT 65 46P

CONTRACT: NObsr-89489

PROJ: SR-008-0301

TASK: 9475

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-620 267.

DESCRIPTORS: (*SEMICONDUCTORS, ELECTROLUMINESCENCE), (*ELECTROLUMINESCENCE, DISPLAY SYSTEMS), (*DISPLAY, SEMICONDUCTOR DIODES), GALLIUM ALLOYS, ARSENIC ALLOYS, PHOSPHORUS ALLOYS, OPTICAL PROPERTIES, PROCESSING, ZINC, DIFFUSION, LUMINESCENCE, EMISSIVITY, ETCHING (U)

GaAs1-xPx from a commercial source and from an in-house materials development project has been thoroughly evaluated for use in injection electroluminescence display. The work includes measurement of optical transmission, etch pit density and photoluminescence in the starting material. Processing techniques for etch polishing, Zn diffusion and diode fabrication were developed and photoluminescence of the resulting p-skins and the spectra, luminous emittance and quantum efficiency in diodes were measured. The overall conclusion is that at present only the -hpamaterial is suitable for the display application. It yields smooth regular Zn diffusion fronts; the diodes have edge emission quantum efficiencies greater than .0001 and luminous emittances of roughly 50 lumens/sq ft at about 10 A/sq cm. (Author)

(U)

AD- 626 616

UNCLASSIFIED

PAGE

123

AD- 625 676

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 622 879

TRW SEMICONDUCTORS INC LAWDALE CALIF RESEARCH AND
DEVELOPMENT DEPT

TRANSISTOR, VHF, SILICON, POWER (10W-500MC). (U)

DESCRIPTIVE NOTE: Final rept. for 1 Jul 63-15 Jan 65.

JAN 65 120P Clarke, R. N.; Crisnal, J. ;

REPT. NO. 59-RD-F

CONTRACT: DA36 030AMC03180E

PROJ: 1P6 22001A056

TASK: 1P6 22001A056 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Available copy will not permit fully legible reproduction. Reproduction will be made if requested by users of DDC. Copy is available for public sale. See also AD-439 230.

DESCRIPTORS: (*TRANSISTORS, SILICON), VERY HIGH FREQUENCY, RADIOFREQUENCY POWER, CRYSTALS, PROCESSING, PACKAGING, CHEMICAL MILLING, DIFFUSION, SILICONE PLASTICS, VAPOR PLATING, METAL FILMS (U)

The transistor produces 10 watts at 500 mc with 5-6 db of power gain and 30-40% collector efficiency.

The crystal was originally designed according to present power gain theory, but it only had one to two db of power gain at 500 mc. The second crystal design was based upon the smallest practical pattern dimensions, or a 0.1 mil minimum spacing. The redesigned pattern also had provision for analyzing the transistor in multiples of sub cells as well as in its entirety. Such an analysis showed the necessity of symmetry of base feed in common emitter amplifiers to get all the cells working together. Paralleling of cells also indicated an apparent loss in f sub T with increased size. Processing and assembly was generally along standard industry practice except in the area of photoresist. There, improved glass masks were used, along with the new XTR photoresist. Successful etching of fine metallized patterns was accomplished through the development of a jet etching technique. To retain as much of the innate crystal performance capability as possible, considerable work was done on packaging. It was concluded that no available package was truly adequate.

(U)

AD- 622 879

UNCLASSIFIED

PAGE

124

AD- 621 454

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 621 454

HARSHAW CHEMICAL CO CLEVELAND OHIO

RESEARCH ON PHOTOVOLTAIC CELLS. (U)

DESCRIPTIVE NOTE: Final rept. for 1 May 62-30 Apr 65.

JUN 65 125P Heyerdahl, Norman E.; Harvey,

Donald J. ;

CONTRACT: AF33 657 7916

PROJ: 7885

TASK: 788502

MONITOR: ARL , 65-111

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-439 672.

DESCRIPTORS: (*SOLAR CELLS, SEMICONDUCTING FILMS), (*SEMICONDUCTING FILMS, SOLAR CELLS), CADMIUM COMPOUNDS, SULFIDES, SELENIUM, CADMIUM ALLOYS, SILICENIUM ALLOYS, TELLURIUM ALLOYS, ZINC ALLOYS, GALLIUM ALLOYS, ARSENIC ALLOYS, CHEMICAL MILLING, VAPOR PLATING, MAGNETIC PROPERTIES, ELECTRICAL PROPERTIES, THERMOELECTRICITY, LIGHT TRANSMISSION (U)

IDENTIFIERS: THIN FILMS (U)

The report describes research and development on thin film solar batteries. The fabrication and study of thin films of CdS:Se, CdSe, CdTe, ZnSe, and GaAs and thin film solar batteries of CdS:Se, CdSe, and CdTe is discussed in detail. A study of the etching behaviour of II-VI compounds, completed as a part of this program, has been published elsewhere. An abstract of the work is included in this report.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 619 295

MOTOROLA INC PHOENIX ARIZ SEMICONDUCTOR PRODUCTS DIV

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 1, 1 Jan-31 Mar 65.

31 Mar 65. Kearkuff, Thomas :

CONTRACT: DA36 039AMC06156E

PROJ: 74001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*TRANSISTORS, MANUFACTURING). (*SILICON, TRANSISTORS). DIFFUSION, GOLD, CHEMICAL MILLING, PRECISION FINISHING, PROCESSING, ENCAPSULATION, BONDING, GLASS, WIRE, STORAGE, EPITAXIAL GROWTH, RELIABILITY(ELECTRONICS) (U)

New base predeposition and base diffusion systems were put into production and evaluated. Work was started on a new emitter and gold diffusion process. Work was started on the emitter stripe width evaluation. Chemical etching was placed into production and work on slurry polishing is almost complete. A new photoresist was evaluated and production controls are presently being applied. New assembly parts and processes were evaluated from the assembly viewpoint. (Author) (U)

AD- 619 295

UNCLASSIFIED

PAGE

:25

AD- 616 786

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 616 786

RENSELAER POLYTECHNIC INST TROY N Y

PRINCIPLES OF METALLOGRAPHIC ETCHING. (U)

DESCRIPTIVE NOTE: Technical rept., JUN 65 26P Greene, Norbert D. ; Rudaw, Peter S. ; Lee, Linda :

REPT. NO: TR-2

CONTRACT: Nonr-59117

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*CHEMICAL MILLING, ALLOYS), (*METALLOGRAPHY, CHEMICAL MILLING), TIN ALLOYS, ZINC ALLOYS, SODIUM COMPOUNDS, HYDROXIDES, ELECTROLYTES, ANALYSIS (U)

The principles of metallographic etching have been determined by electrochemical and optical measurements on tin-zinc alloys in sodium hydroxide electrolytes. The minimum dissolution rate ratio and the minimum amount of selective dissolution necessary to achieve metallographic contrast of phases have been measured. Etching rate and contrast are uniquely defined by etching potential by potentiostatic, electrolytic and chemical etching methods. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 614 823

NATIONAL SEMICONDUCTOR CORP DANBURY CONN

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION
TECHNIQUES AND INCREASE THE RELIABILITY OF THE
2N328A TRANSISTOR. (U)

DESCRIPTIVE NOTE: Final rept. for 30 Jun 63-30 Dec 64.

DEC 64 246P Rau.R. R. :Di Paola,R. :
CONTRACT: DA36 039AMC01480E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Available copy will not permit fully
legible reproduction. Reproduction will be made if
requested by users of DDC. Copy is available for public
sale. See also AD-608 583.

DESCRIPTORS: (*TRANSISTORS, MANUFACTURING), RELIABILITY
(ELECTRONICS), PRODUCTION, FAILURE (MECHANICS), TESTS,
SILICON ALLOYS, PROCESSING, SPECIFICATIONS, QUALITY
CONTROL, LIFE EXPECTANCY, CHEMICAL MILLING, ALUMINUM,
VAPOR PLATING, GAS ANALYSIS, WELDING, HEATING, FURNACES,
INDUSTRIAL EQUIPMENT (U)

A summary is given of the work performed for
improving the reliability of the PNP Silicon
Alloy Transistor Type 2N328A. The
following processes were modified during the course
of the contract: An etch wheel was introduced to
more accurately control final device etching;
Additional bake-out furnaces were introduced and
evaluated to increase the amount of time which the
units are heated after etching; A gas recirculator
was introduced into the final dry line to reduce the
water vapor concentration; Welding shields were
introduced at two welding operations while one other
process was modified; all these changes were made in
order to decrease the amount of weld splash striking
the active region of the transistor. Devices
produced for the first month of operation of the
improved manufacturing line were used for the long
term reliability testing. Measurements on devices
made during this period of manufacture are included.
This reliability evaluation consisted of
operational tests for a 1000 hours at power levels of
400, 450, and 500 milliwatts;

(U)

AD- 614 823

UNCLASSIFIED

PAGE

126

AD- 614 180

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 614 180

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

ELECTROCHEMICAL DEMBER EFFECT IN SEMICONDUCTORS, (U)

64 9P Harvey,W. W. :Finn,Mary G.

REPT. NO. JA-2390
CONTRACT: AF19 628 500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Surface Science v2 p456-63
1964 (Copies available only to DDC users).

DESCRIPTORS: (*SEMICONDUCTORS, ELECTROCHEMISTRY),
(*ELECTROCHEMISTRY, SEMICONDUCTORS), ETCHED CRYSTALS,
GERMANIUM, SILICON, INDIUM ALLOYS, ANTIMONY ALLOYS,
SURFACE PROPERTIES, THERMOELECTRICITY (U)
IDENTIFIERS: DEMBER EFFECT, INDIUM ANTIMONIDE (U)

It was demonstrated that during steady-state
etching of a semiconductor with zero net current
across the interface, there is a potential
difference, superposed upon that of the space charge,
between surface and interior whenever the reaction
results in a net consumption or generation of
carriers. It was possible to make rough
measurements of this potential difference, which like
the optically induced Dember effect is associated
with gradients of excess carrier densities.
Measured signals were of the correct order of
magnitude and, for reactions known to be injecting,
of the proper sign. In addition to etching
reactions involving a net generation of carriers,
examples were found of reactions which extracted
carriers from the semiconductor as well as reactions
in which the carriers apparently do not participate.
(Author)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 613 643

ARMY MATERIALS RESEARCH AGENCY WATERTOWN MASS

THE METALLOGRAPHY OF PYROLITIC GRAPHITE, (U)

DEC 64 19P
Tarpinian, Aram ;
REPT. NO. AMRA-TN-64-41
PROJ: 1A010501B010
TASK: 35183

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PYROLITIC GRAPHITE, MICROSTRUCTURE), ION BOMBARDMENT, ARGON, MERCURY, CHEMICAL MILLING, ELECTROLYTIC POLISHING (U)

Etching of pyrolytic graphite by both argon ion bombardment and mercury ion bombardment is described. The difference between the microstructures revealed by the two methods is discussed, and an interpretation is suggested. Argon ion bombardment creates a leaf-like pattern reminiscent of stacked shingles. Mercury ion bombardment reveals a laminar structure unlike that produced by argon ion bombardment. Electrochemical polishing and etching reveals microstructures similar to those created by ion bombardment. Using an electrolyte based on phosphoric acid, microstructures similar to those resulting from mercury ion bombardment are revealed. Replacing the phosphoric acid with nitric acid results in microstructures similar to those obtained by argon ion bombardment. Based on the correlation between microstructures developed by ion bombardment and electrochemical etching, it is concluded that the microstructures revealed represent the true structure. (Author) (U)

AD- 613 643

UNCLASSIFIED

PAGE

127

AD- 610 434

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 610 434

FRANKLIN INST PHILADELPHIA PA LABS FOR RESEARCH AND DEVELOPMENT

RESEARCH IN THE GENERAL FIELD OF SUBSTRUCTURE AND DISLOCATION NETWORKS IN METALLIC CRYSTALS. (U)

DESCRIPTIVE NOTE: Final rept. for 1 Apr 60-30 Apr 62.
APR 62 48P Damiano, V. V. ; tint, G. S. ;
Herman, M. ;
REF. NO. F-A2400
CONTRACT: AF49 638 821
MONITOR: AFOSR , 2574

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+METAL CRYSTALS, CRYSTAL STRUCTURE), (+CRYSTAL STRUCTURE, METAL CRYSTALS), CRYSTAL SUBSTRUCTURE, CRYSTAL DEFECTS, CRYSTALS, ZINC, IMPURITIES, CADMIUM, CHEMICAL MILLING, PHOTOMICROGRAPHY, CRYSTALLOGRAPHY (U)

The three dimensional aspects of dislocation substructures were studied in cadmium doped zinc crystals grown from the melt. Precipitates delineating the dis locations were revealed by etching a surface closely parallel to the slip plane. Using a technique of continuous etching and cinephotomicrography, the course of the dislocations was followed through the crystal. Tangles of dislocations were observed in deformed crystals. After annealing a rearrangement of dislocations into low-angle and hexagonal networks was evidenced. Closed loops and spiral dislocations were found to be associated with large inclusions. A mechanism for the multiplication of dislocations at inclusions was proposed. Dislocation reactions accounting for the observed substructures have been proposed. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 606 477

CRYSTALONICS INC CAMBRIDGE MASS

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION
TECHNIQUES AND TO INSURE THE RELIABILITY OF THE C600
SERIES FIELD EFFECT TRANSISTORS. (U)

DESCRIPTIVE NOTE: Quarterly rept. no. 4, 1 Apr-30 Jun
64.

JUN 64 40P Williams, John R. ;

CONTRACT: DA36 039AMC01483E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Legibility of this document is in part
unsatisfactory. Reproduction has been made from best
available copy. See also AD-601 433.

DESCRIPTORS: (*TRANSISTORS, MANUFACTURING),
(*RELIABILITY (ELECTRONICS), TRANSISTORS), BONDING,
DIES, CHEMICAL MILLING, VACUUM FURNACES, CONTROLLED
ATMOSPHERES, ENCAPSULATION, INDUSTRIAL EQUIPMENT (U)

Ultrasonic bonding has been discarded in preference
to a new-metalization ball-bonding technique. All
production FETs are being die-to-header bonded
using a heavy gold plate on dice and headers. A
slight modification has been made in the mask design
to facilitate bonding. Mesa etching fixtures and
slice preparation fixtures are complete and are in
use in the production process. Various experiments
have been run utilizing various dew point ambients,
coating agents, and bakeouts. As a result,
production units are being vacuum baked at 200C.
and packaged in a dry nitrogen atmosphere of -60C.
dew point or better. Life test racks are being
constructed. A manual of Q.C. procedures has
been prepared. (Author) (U)

AD- 606 477

UNCLASSIFIED

PAGE

128

AD- 606 191

UNCLASSIFIED

ZOMOB

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMOB

AD- 606 191

SILICON TRANSISTOR CORP GARDEN CITY N Y

PRODUCTION ENGINEERING MEASURE TO INCREASE THE
RELIABILITY OF THE TRANSISTOR TYPE 2N2034. (U)

DESCRIPTIVE NOTE: Quarterly progress rept. no. 4, 1 Apr-

30 Jun 64,

JUN 64 29P

Cocking, J. ; Courier, J. ;

Des Roches, F. ; Hughes, D. ; Martin, E. ;

CONTRACT: DA36 039AMC01482E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*TRANSISTORS, RELIABILITY (ELECTRONICS)),
PROCESSING, DISKS, SILICON, CLEANING, ABRASIVE BLASTING,
SOLDERING, CHEMICAL MILLING, ENCAPSULATION, WELDING,
HERMETIC SEALS, TESTS, CONTROLLED ATMOSPHERES,
PERFORMANCE (ENGINEERING), NICKEL, PELLETS (U)

The report describes the processing developments in
wafer cleaning, mesa delineation, scribing of water,
pellet to nickel-plated header soldering, nickel-
plated clip to pellet soldering, final etch of
soldered unit, final test and encapsulation of etched
units, and weld and hermetic seal tests for the
transistor type 2N2034. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 484 781

9/5

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y RELIABILITY
BRANCHDEVELOPMENT OF A MICROELECTRONICS CAPABILITY AND
FACILITY AT RADC. (U)

DESCRIPTIVE NOTE: Technical rept.,

MAY 66 140P O'Connell, Edward P. ;

Calabrese, Donald W. ; Walsh, Thomas W. ; Lane,

Clyde H. ; Farrell, John P. ;

PROJ: RADC-DS-63-6

MONITOR: RADC TR-65-439

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, PROCESSING),
CHEMICAL MILLING, PHOTOGRAPHIC FILM, ELECTRIC TERMINALS,
METAL FILMS, SUBSTRATES, CAPACITORS, DEPOSITION, OXIDES,
RESISTORS, SEMICONDUCTOR DEVICES, CONTAMINATION,
IMPURITIES, DIFFUSION, EPITAXIAL GROWTH, SILICON,
MICROPHOTOGRAPHY (U)
IDENTIFIERS: PHOTORESIST, PHOTORESIST TECHNIQUES,
PHOTORESISTS, THIN FILMS (U)

This report discusses the basic facilities required for conducting exploratory research in microelectronics, and specific information pertaining to silicon wafer processing, epitaxial growth, photolithography, diffusion, thin film processing, as well as material characteristics and limitations. Methods are described for obtaining precision drawings and reduction techniques that are recommended in photo mask making. Processing of photo resist materials, including solutions and methods of etching both metal and oxide masks, is presented. The results are given of bonding investigations using ultrasonic energy and various combinations of land and wire materials that have been successfully joined. Step-by-step procedures for fabricating thin film passive components are outlined. A negative resistance behavior that was observed in valve metal oxides and the circuit that utilized this phenomenon to produce voltage tunable oscillators from 2KHz to 2MHz is shown. The performance characteristics of two thin film amplifiers that were designed to operate at 455 KHz and 30M Hz, respectively, are given. (U)

AD- 484 781

UNCLASSIFIED

PAGE

129

AD- 477 816

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 477 816

11/4

11/6

11/9

NARMCO RESEARCH AND DEVELOPMENT DIV WHITTAKER CORP SAN
DIEGO CALIFRESEARCH ON RESIN-IMPREGNATED, COLLIMATED BORON
FILAMENTS AND IMPROVED HIGH-MODULUS, HIGH-STRENGTH
FILAMENTS AND COMPOSITES. (U)DESCRIPTIVE NOTE: Annual summary rept. 1 Oct 64-30 Sep
65,

DEC 65 264P Wilson, Frank M. ; Lane,

Edward K. ;

CONTRACT: AF33(615)-2150

MONITOR: AFML TR-65-382

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates: all
DDC reproductions will be in black and white. Original
may be seen in DDC Headquarters.
DESCRIPTORS: (*BORON, *FIBERS), (*COMPOSITE MATERIALS,
REINFORCING MATERIALS), TAPES, LAMINATED PLASTICS,
ETCHING, IMPREGNATION, COMPRESSIVE PROPERTIES, FLEXURAL
STRENGTH, TENSILE PROPERTIES, FINISHES, HEAT TREATMENT,
MODULUS OF ELASTICITY, FILAMENTS, EPOXY RESINS, NITRIC
ACID, PANELS (U)
IDENTIFIERS: BORON, FIBERS, BORON, FILAMENTS (U)

IAC ACCESSION NUMBER: MCIC-065528 PL-007727
IAC DOCUMENT TYPE: MCIC -HARD COPY-- PLASTIC -HARD
COPY--

Efforts were made to maximize the portion of the basic strength in boron filaments which could be utilized in composite tape, NOL-rings, laminate panels, and test specimens therefrom. The objective was approached by comparative studies of the effectiveness of various etchants, finishes, resin systems, and processing variables. The latter processing variables were those involved in the conversion of reeled boron filaments supplied as Government-furnished property into collimated, preimpregnated multifilament tape and then into press laminate panels and NOL-rings from which test specimens were cut and evaluated. Tensile strength utilization of boron fibers in NOL-ring composites was increased 50% by an as-received fiber treatment consisting of nitric acid etching for 20 seconds at 248 F followed by 2-second exposure to a nitrogen atmosphere at 1500 F. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 476 696

10/2

RCA LABS DIV RADIO CORP OF AMERICA PRINCETON N J

IMPROVED THIN-FILM SOLAR CELLS.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Nov 64-15 Nov 65.

JAN 66 65P Perkins, David M.; Hui,

William L.; Noel, Gerald; Pasierb, Edward F.;

CONTRACT: AF33(615)-2259

PROJ: AF-8173

TASK: 817301-34

MONITOR: AFAPL TR-65-123

UNCLASSIFIED REPORT

DESCRIPTORS: (*SOLAR CELLS, FILMS), COSTS, WEIGHT, MANUFACTURING, ABSORPTION, GALLIUM COMPOUNDS, ARSENIC COMPOUNDS, OXIDES, SINGLE CRYSTALS, CRYSTAL GROWTH, THICKNESS, DOPING, GRAIN BOUNDARIES, PLATINUM, SILICON COATINGS, ETCHING, ANNEALING, DEGRADATION, HUMIDITY, TEMPERATURE, STABILITY (U)

IDENTIFIERS: ANTIREFLECTION COATINGS, THIN FILMS (U)

During this contract thin-film GaAs solar cells using semitransparent Pt layers as the barrier contact have been made and investigated to improve their photovoltaic characteristics. Studies of the GaAs film, grown by the close-spaced oxide transport process, and the barrier contact structure, consisting of the Pt film, gridding and antireflection coating, led to the fabrication of cells with the following maximum efficiencies: 5.1% for 0.2 cc, 4.5% for 2.0 cc and 3% for 4.0 cc. It was shown that degradation of these cells in room ambient is due to the post-evaporation etching used during the fabrication process. Stable cells were made with efficiencies of 2.8% for areas of 2.0 cc. Tests were made to evaluate the effects of temperature, vacuum, moisture, ultraviolet light, and proton radiation on the Pt-GaAs structure. (Author) (U)

AD- 476 696

UNCLASSIFIED

PAGE

130

AD- 476 469

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 476 469

13/8

9/5

WESTINGHOUSE ELECTRIC CORP ELK RIDGE MD MOLECULAR ELECTRONICS DIV

CONTINUOUS PROCESSES FOR FUNCTIONAL ELECTRONIC BLOCKS.

(U)

DESCRIPTIVE NOTE: Final technical rept. 15 Jun 63-9

Nov 65.

NOV 65 354P

REPT. NO. 5377A

CONTRACT: AF33(657)-11204

PROJ: MM-8-133

MONITOR: AFML TR-65-398

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, PROCESSING), DESIGN, MACHINES, OPTIMIZATION, OXIDATION, ETCHING, DIFFUSION, PHOTOENGRAVING, PRODUCTION, AUTOMATION, QUALITY CONTROL, EPITAXIAL GROWTH, SILICON, CLEANING, SULFURIC ACID, NITRIC ACID, CONTROLLED ATMOSPHERES, DIBORANES, ARGON, NITROGEN, MATERIALS, REMOVAL, HYDROGEN COMPOUNDS, CHLORIDES, TESTS, ACCEPTABILITY (U)

IDENTIFIERS: HYDROGEN CHLORIDE (U)

IAC ACCESSION NUMBER: MCIC-063356

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The primary goal of this continuous processing program was to substantially improve the oxidation, etching, and diffusion processes as they apply to functional electronic blocks and other planar semiconductor devices. Machines were designed to perform the manufacturing steps in the major areas within the scope of the program: furnace systems and wet chemical and photoengraving processes. Wafers were processed through continuous furnaces at a much higher capacity than with batch furnaces and with distributions comparable to those of high quality batch results. Dendritic web processed through the same furnaces was compared to web and to wafers processed by standard batch methods; the results indicated a definite superiority of the web silicon in conjunction with the continuous processing technique. In the wet chemical and photoengraving areas, where the majority of the tweeter handling occurs, a series of processing machines was designed to be compatible with an 18-wafer universal carrier as a transport device. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 467 531

TEXAS INSTRUMENTS INC DALLAS

DEVELOPMENT OF GALLIUM ARSENIDE-PHOSPHIDE GRADED
BAND-GAP BASE TRANSISTOR STRUCTURES. (U)

DESCRIPTIVE NOTE: Summary engineering rept., 23 Jun 64-

23 Jun 65.

JUL 65 1V

REPT. NO. 71-08-65-99

CONTRACT: N000191238

PROJ: SRO080301

TASK: 9346

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*TRANSISTORS, GALLIUM ALLOYS), (*GALLIUM ALLOYS, EPITAXIAL GROWTH), ARSENIC ALLOYS, PHOSPHORUS ALLOYS, PROCESSING, VAPOR PLATING, CHLORIDES, ARSENIC COMPOUNDS, PHOSPHORUS COMPOUNDS, X RAY DIFFRACTION, REFLECTION, DIFFUSION, MAGNESIUM, CONFIGURATION, SULFUR, ELECTRODES, MANUFACTURING, ZINC, IMPURITIES, INJECTION (U)

The developments leading to fabrication of graded band-gap base transistor structures in gallium arsenide-phosphide are described. The material for the transistors was produced by epitaxial vapor phase deposition on GaAs substrates, using an open-tube flow system, with PCl₃ and AsCl₃ vapors carried over GaAs feed in a hydrogen stream. The desired composition grading for the base region was obtained by continuously varying the AsCl₃-to-PCl₃ ratio of the entering gases. Deposit compositions were determined by x-ray diffraction and optical reflectivity techniques, combining the latter with incremental etching to evaluate graded deposits. The transistors (n-p-n) were made by diffusing magnesium to form the base region and either alloying Au-Ge-S or diffusing sulfur through an SiO film to form the emitter. The best results were obtained with the diffused emitter. Good p-n junction diodes were also made using epitaxially Zn-doped Ga(As,P).

(U)

AD- 467 531

UNCLASSIFIED

PAGE

:31

AD- 464 486

UNCLASSIFIED

ZOM08

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 464 486

MITRE CORP BEDFORD MASS

FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO
THIN-FILM CIRCUIT DEPOSITION. (U)

MAY 65 20P Everett, P.; Roderick, R.;

REPT. NO. W-06760

CONTRACT: AF19 628 2390

PROJ: 508

MONITOR: ESD TOR-64-634

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*TEMPLATES, GLASS), (*SEMICONDUCTING FILMS, MANUFACTURING), (*GLASS, MATERIALS), PRINTED CIRCUITS, INORGANIC ACIDS, FLUORIDES, RESISTORS, MINIATURE ELECTRONIC EQUIPMENT, INTEGRATED CIRCUITS, PRECISION FINISHING, PHOTO ENGRAVING, (U)PHOTO ENGRAVING (U)

IDENTIFIERS: HYDROFLUORIC ACID, THIN FILMS (U)

This report describes a process which has been developed for the etching of glass masks. A discussion of the requirements for these masks in thin-film circuit deposition precedes a detailed description of the process. Six masks were produced by the process, and measurements were made to determine the tolerances obtained. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM08

AD- 450 549

SIGNETICS CORP SUNNYVALE CALIF

AN ECONOMICAL FLAT PACKAGE FOR INTEGRATED
CIRCUITS. (U)

DESCRIPTIVE NOTE: Interim development rept. no. 1, 15
June 15 Sep 64.

SEP 64 22P

CONTRACT: NObsr91298

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*PACKAGING, INTEGRATED CIRCUITS).
(*INTEGRATED CIRCUITS, PACKAGING), CIRCUIT
INTERCONNECTIONS, METAL FILMS, CHEMICAL MILLING,
ELECTROPLATING, PRODUCTION, MANUFACTURING, SILICON,
ALUMINUM (U)

The schedule for making the first seal of the metal
leads to the package substrate is complete. By a
process of electroplating and etching metal film
interconnections have been laid down, but many
problems remain in this area. A few circuits were
assembled on this substrate and where all previous
steps were satisfactory, electrical continuity has
been established. (author) (U)

AD- 450 549

UNCLASSIFIED

PAGE

132

UNCLASSIFIED

CORPORATE AUTHOR - MONITORING AGENCY

AEROSPACE CORP EL SEGUNDO CALIF IVAN
A GETTING LABS

TR-0077(2270-20)-1
Metal-Insulator-Semiconductor
Studies of Lead Telluride.
(SAMSO-TR-77-72)
AD-A038 996

AEROSPACE CORP EL SEGUNDO CALIF LAB
OPERATIONS

TR-0073(9250-05)-1
Coordination Chemistry and
Kinetics of Preferential Etching on
Surfaces of TiO₂ (Rutile).
(SAMSO-TR-73-148)
AD- 759 259

TR-0158(3250-10)-10
ELIMINATION OF DAMAGE TO
METALLOGRAPH OBJECTIVE LENSES BY
ETCHANTS CONTAINING HYDROFLUORIC
ACID.
(SAMSO-TR-68-29)
AD- 664 554

TR-0158(3250-10)-11
CHEMICAL TINTING OF HAFNIUM AND
ZIRCONIUM CARBIDES FOR
METALLOGRAPHIC EXAMINATION,
(SAMSO-TR-68-220)
AD- 671 925

TR-0158(9230-03)-3
ETCHING AND REGROWTH OF CUPROUS
CHLORIDE,
(SAMSO-TR-68-281)
AD- 674 757

TR-0158(9230-03)-4
ETCHING BEHAVIOR OF IN2O3 GROWN
FROM PbO-B2O3,
(SAMSO-TR-68-165)
AD- 668 449

AIR FORCE AVIONICS LAB WRIGHT-
PATTERSON AFB OHIO

AFAL-TR-69-140
EFFECT OF KILOVOLT ELECTRONS ON

THE ETCH RATE OF Al2O3 AND Ta2O5.
AD- 696 861

AIR FORCE CAMBRIDGE RESEARCH LABS L G
HANSCOM FIELD MASS

AFCLR-66-659
CRYSTAL PERFECTION OF ALPHA-
AL2O3 AS A FUNCTION OF GROWTH
METHOD.
AD- 642 040

AFCLR-72-0731
Fabrication of Elastic Surface
Devices by Chemical Etching.
AD- 758 762

AFCLR-PSRP-268
CRYSTAL PERFECTION OF ALPHA-
AL2O3 AS A FUNCTION OF GROWTH
METHOD.
AD- 642 040

AFCLR-PSRP-518
Fabrication of Elastic Surface
Devices by Chemical Etching.
AD- 758 762

AIR FORCE INST OF TECH WRIGHT-
PATTERSON AFB OHIO SCHOOL OF
ENGINEERING
DS/PH/75-4
The Effects of Surface
Structural Properties on Laser-
Induced Damage at 1.06 Micrometers.
(AFWL-TR-76-62)
AD-A019 325

GE/EE/68-7
EFFECT ON ETCH RATE OF OXIDE
SURFACES AFTER ELECTRON
BOMBARDMENT.
AD- 833 329

GE/EE/68-13
AU-ZNTE SCHOTTKY BARRIER
FABRICATION BY LOW-ENERGY ION
ETCHING TECHNIQUES.
AD- 833 283

CORP AUTHOR-MONITOR AGENCY-1
UNCLASSIFIED ZOM08

GE/EE/72-10
A Study of RF Sputter Etching
in an Argon Plasma Using Silicon as
a Target.
AD- 742 436

GE/EE/73-23
RF Sputter Etching of Al, SiO₂,
and Photoresist.
AD- 757 878

GE/EE/74-35
A Study of the Etching
Characteristics of Semiconductor
Materials in RF Plasmas.
AD- 781 831

AIR FORCE MATERIALS LAB WRIGHT-
PATTERSON AFB OH
AFNL-TR-79-4178-PT-1
Failure Mechanisms and
Interphase Chemistry of Gold Films
on Ti6Al4V. Part I. Surface
Chemistry of Failure Surfaces.
AD-A081 727

AFNL-TR-79-4178-PT-2
Failure Mechanisms and
Interphase Chemistry of Gold Films
on Ti6Al4V. Part II. Etching of
Ti6Al4V and its Effect on
Evaporated Gold and Commercial
Adhesive Adhesion.
AD-A081 728

AIR FORCE MATERIALS LAB WRIGHT-
PATTERSON AFB OHIO
AFNL-TR-66-268
INVESTIGATION OF SINGLE-CRYSTAL
DIMOLYBDENUM CARBIDE.
AD- 803 613

AFNL-TR-66-404-PT-2
MECHANICAL BEHAVIOR OF
BERYLLIUM WIRE REINFORCED PLASTIC
COMPOSITES. PART II. TIME
DEPENDENT MECHANICAL PROPERTIES.
AD- 674 591

UNCLASSIFIED

AFML-TR-76-29-PT-2
Surface Characterization of
Titanium and Titanium Alloys. Part
II. Effect on Ti-6Al-4V Alloy of
Laboratory Chemical Treatments.
(GIDEP-E146-1128)
AD-A027 134

AFML-TR-76-29-PT-3
Surface Characterization of
Titanium and Titanium Alloys. Part
III. Effect on Ti (C.P.) and Ti-
8Mn of Laboratory Chemical
Treatments.
(GIDEP-E140-0572)
AD-A032 954

AIRSEARCH MFG CO OF ARIZONA PHOENIX
74-210841 (29)
Integral, Low-Cost, High-
Temperature Turbine Feasibility
Demonstrator (Small Laminated Axial
Turbine Program).
(AFAPL-TR-77-2)
AD-A038 674

ARMY ARMAMENT RESEARCH AND DEVELOPMENT
COMMAND DOVER NJ LARGE CALIBER
WEAPON SYSTEMS LAB
ARLCD-TR-77010
A Technique for Assessing the
Durability of Structural Adhesives.
(GIDEP-E123-0228)
AD-A057 197

ARLCD-TR-78001
Chromate-Free Method of
Preparing Aluminum Surfaces for
Adhesive Bonding. An Etchant
Composition of Low Toxicity.
(GIDEP-E102-0129)
AD-A056 241

ARLCD-TR-78047
A Round-Robin Evaluation of
Adhesive Bonding Processes Related
to the Shelter Industry.
(GIDEP-E146-0330)
AD-A065 360

ARMY ELECTRONICS COMMAND FORT
MONMOUTH N J INST FOR EXPLORATORY
RESEARCH
MORPHOLOGICAL FEATURES OF
HEXAGONAL FERRITES.
AD- 653 335

DIRECT SOLUTION OF COMPLEX
CRYSTAL STRUCTURES BY ELECTRON
MICROSCOPY.
AD- 713 554

ARMY ELECTRONICS COMMAND FORT
MONMOUTH N J INTEGRATED
ELECTRONICS DIV
DURABLE CHROMIUM MASKS FOR
PHOTORESIST APPLICATIONS.
AD- 647 160

ARMY ELECTRONICS COMMAND FORT MONMOUTH
N J
Mode Control and Related
Studies of VHF Quartz Filter
Crystals.
AD- 736 758

ECOM-2715
CHROMIUM MASKS FOR
MICROCIRCUITRY.
AD- 634 762

ECOM-4059
Interaction of Semiconductor
Materials with Laser Radiation at
10.6 Micrometers.
AD- 753 918

ECOM-4548
Chemically Polished Quartz.
AD-A048 077

ARMY ELECTRONICS COMMAND FORT MONMOUTH
N J ELECTRONIC COMPONENTS LAB
INCREASED RESISTANCE OF CRYSTAL
UNITS AT OSCILLATOR NOISE LEVELS.
AD- 658 947

ARMY ELECTRONICS RESEARCH AND
DEVELOPMENT COMMAND FORT MONMOUTH
NJ ELECTRONICS TECHNOLOGY/DEVICES
LAB
DELET-TR-80-5
Etching Studies on Singly and
Doubly Rotated Quartz Plates.
AD-A081 729

ARMY FOREIGN SCIENCE AND TECHNOLOGY
CENTER CHARLOTTESVILLE VA
FSTC-HT-23-0628-75
The Work of the State Institute
of Glass in the Area of Glass
Hardening.
AD-A014 053

ARMY INST OF DENTAL RESEARCH
WASHINGTON D C
Enhancing Retention of Acid
Etch Resin Restorations in Primary
Teeth.
AD-A026 852

High Temperature Microscopy of
Porcelain-Precious Alloys.
AD-A039 647

Criteria for Successful
Composite Restorations.
AD-A071 064

ARMY MATERIALS AND MECHANICS RESEARCH
CENTER WATERTOWN MASS
AMMRC-TR-70-31
Transmission Microscopy of Ion-
Bombardment Thinned Boron Carbide.
AD- 715 857

AMMRC-TR-77-18
Radiography with the Fission
Neutrons from Californium-252.
AD-A045 362

ARMY MATERIALS RESEARCH AGENCY
WATERTOWN MASS

CORP AUTHOR-MONITOR AGENCY-2
UNCLASSIFIED ZOM08

IRE-RMY

UNCLASSIFIED

AMRA-TR-64-41
THE METALLOGRAPHY OF PYROLITIC
GRAPHITE.
AD- 613 643

AUSTRALIAN DEFENCE SCIENTIFIC SERVICE
MELBOURNE
* * *

The Nature of the White-etching
Surface Layers Produced During
Reaming Ultra-high Strength Steel.
AD-A076 864

BATTELLE MEMORIAL INST COLUMBUS OHIO
* * *

PLASTIC FLOW IN THE LOCALE ON
NOTCHES AND CRACKS IN Fe-3Si STEEL
UNDER CONDITIONS APPROACHING PLANE
STRAIN.
(SSC-191)
AD- 680 123

BATTELLE MEMORIAL INST COLUMBUS OHIO
DEFENSE METALS INFORMATION CENTER
* * *

DMIC-MEMO-237
A REVIEW OF METALLOGRAPHIC
PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS,
AD- 674 066

BELL HELICOPTER TEXTRON FORT WORTH
TEX

BHT-699-099-104
Evaluation of Non-Chromated
Etch for Aluminum Alloys (P-Etch).
AD-A064 373

BOEING CO SEATTLE WASH COMMERCIAL
AIRPLANE GROUP
* * *

D6-60208-1
SST Technology Follow-On
Program, Phase I. Compatibility of
SST Materials with Titanium Alloys.
Volume I. Flyaway Materials.
(FAA-SS-72-08-1)
AD- 902 458

BOEING COMMERCIAL AIRPLANE CO SEATTLE

WASH

* * *
Anodize Optimization and
Adhesive Evaluations for Repair
Applications.
(AFML-TR-78-104).
AD-A061 758

BULOVA WATCH CO INC WOODSIDE N Y
ELECTRONICS DIV
* * *

PRODUCTION ENGINEERING MEASURE
FOR TYPE CR-(XM-60)/U CRYSTAL
UNITS.
AD- 642 425

BUNKER-RAMO CORP CANOGA PARK CALIF
DEFENSE SYSTEMS DIV
* * *

PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
(ECOM-02024-5)
AD- 667 368

* * *
F-058
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
(ECOM-02024-1)
AD- 639 068

CALIFORNIA INST OF TECH PASADENA
* * *

Linearity and Enhanced
Sensitivity of the Shipley AZ-1350B
Photoresist,
(AFOSR-TR-77-109)
AD-A045 389

CALIFORNIA INST OF TECH PASADENA CALIF
DEPT OF ELECTRICAL ENGINEERING
* * *

SCIENTIFIC-2
Analysis of Aluminum Oxide
Films on Silicon,
(AFCLR-72-0319)
AD- 747 019

CALIFORNIA UNIV BERKELEY
* * *
Optical Waveguides Fabricated
by Preferential Etching.

CORP AUTHOR-MONITOR AGENCY-3
UNCLASSIFIED ZOMQB

(ARO-11833.9-EL)
AD-A013 153

* * *
Growth Characteristics of GaAs-
Ga(1-x)Al(x)As Structures
Fabricated by Liquid-Phase Epitaxy
Over Preferentially Etched
Channels.
(ARO-11833.27-EL)
AD-A026 425

* * *
Profile and Groove-Depth
Control in GaAs Diffraction
Gratings Fabricated by Preferential
Chemical Etching in H2SO4-H2O2-H2O
System.
(ARO-11833.18-EL)
AD-A026 428

CALIFORNIA UNIV BERKELEY DEPT OF
ELECTRICAL ENGINEERING
* * *

THE GROWTH AND ETCHING OF SI
THROUGH WINDOWS IN SiO.
(AFOSR-67-2086)
AD- 658 248

CALIFORNIA UNIV BERKELEY ELECTRONICS
RESEARCH LAB
* * *

Theoretical Study and
Experimental Development of Thin-
Film Lasers and Modulators for use
in Integrated Optics.
(AFOSR-TR-75-0081)
AD-A004 138

* * *
Grating Masks Suitable for Ion-
Beam Machining and Chemical
Etching.
(ARC-11833.3-EL)
AD-A005 095

* * *
Properties of Infrared Cat-
Whisker near 10.6 Microns.
(ARO-8733.10-P)
AD-A015 492

* * *
Modeling Validation, Techniques
and Applications for X-Ray
Lithography.

UST-ALI

UNCLASSIFIED

(AFOSR-TR-77-0252) AD-A042 019	Sputter Damage in GaAs Exposed to Low Energy Argon Ions. AD-A080 119	STRUCTURE OF SUBBOUNDARIES IN MOLYBDENUM SINGLE CRYSTALS, AD- 675 563
Line-Profile Resist Development Simulation Techniques. (AFOSR-TR-78-0853) AD-A052 932	CRYSTALONICS INC CAMBRIDGE MASS * * * PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND TO INSURE THE RELIABILITY OF THE C600 SERIES FIELD EFFECT TRANSISTORS. AD- 606 477	FTD-HT-23-622-68 * * * INFLUENCE OF ACTIVE GASES ON THE ELECTROPHYSICAL PROPERTIES OF THE SURFACE OF SILICON, AD- 684 014
Preferential Chemical Etching of Blazed Gratings in (110)- Oriented GaAs, (ARO-11833.33) AD-A074 282	DEFENCE STANDARDS LABS MARIBYRNONG (AUSTRALIA) * * * DISLOCATION ETCHING OF CYCLOTRIMETHYLENE TRINITRAMINE CRYSTALS, AD- 689 936	FTD-HT-23-1225-67 * * * CHEMICAL MILLING (DEEP CONTOUR ETCHING), AD- 680 561
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF METALLURGY AND MATERIALS SCIENCE * * * CMU-031-727-1 GRAIN BOUNDARY SEGREGATION OF IMPURITIES IN METALS AND INTERGRANULAR BRITTLE FRACTURE. AD- 684 497	DEFENCE STANDARDS LABS ALEXANDRIA (AUSTRALIA) * * * Measurement of Deformation in Alpha Brass by Means of an Electrolytic Thiosulfate Etch, AD- 742 198	FTD-HT-23-1240-67 * * * ELECTRONIC AND IONIC PROCESSES IN SOLIDS, NO. 1, 1964 (SELECTED ARTICLES), AD- 675 421
CINCINNATI UNIV OH SOLID STATE ELECTRONICS LAB * * * A Geodesic Optical Waveguide Lens Fabricated by Anisotropic Etching, (AFOSR-TR-79-1123) AD-A078 202	FOREIGN TECHNOLOGY DIV WRIGHT- PATTERSON AFB OHIO * * * FTD-HC-23-266-72 Pretreatment of Titanium for Subsequent Electrodeposition of Metal, AD- 748 525	FTD-HT-23-1248-71 * * * Certain Chemical Properties of Indium Phosphide, AD- 738 682
CLEMSON UNIV S C DEPT OF PHYSICS AND ASTRONOMY * * * The Growth and Characterization of Potassium and Rubidium Azide Single Crystals, (ARO-9603.1-P) AD-A032 619	FTD-HC-23-0882-72 * * * Plasma Babbitt Surfacing of the Steel Base of Bearings, AD- 750 517	FTD-HT-23-1283-68 * * * EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS, AD- 694 802
COLORADO STATE UNIV FORT COLLINS DEPT OF PHYSICS * * * SF24 Broad Beam Ion Source Operation with Four Common Gases. AD-A077 561	FTD-HT-23-152-74 * * * Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching, AD- 768 058	FTD-HT-23-1492-68 * * * METHOD FOR INCREASING THE MECHANICAL STRENGTH OF GLASS, AD- 694 836
SF26	FTD-HT-23-593-67 * * * A STUDY OF DISLOCATION	FTD-HT-66-189 * * * A METHOD OF MAKING MESH FILTERS FROM MATERIALS AND ALLOYS. AD- 635 828
	FTD-HT-23-170 * * * APPLICATION OF THE POTENTIAL POLARIZATION IN THE STUDY AND IN THE METALLOGRAPHY OF CORROSION RESISTANT STEELS, AD- 841 860	FTD-MT-24-21-69 * * * METHODS OF SIC SURFACE AND P-n

CORP AUTHOR-MONITOR AGENCY-4
UNCLASSIFIED ZOM08

ARN-ORE

UNCLASSIFIED

JUNCTION TREATMENT,
AD- 897 569

FTD-WT-24-437-68
GRINDING AND POLISHING LARGE
PLATES FOR AIRCRAFT SKINS,
AD- 688 783

FRANKFORD ARSENAL PHILADELPHIA PA
* * *

FA-TR-75090
Ion Beam Superpolishing of
Metal Mirrors for High Energy
Lasers.
AD-A031 106

FRANKLIN INST PHILADELPHIA PA LABS
FOR RESEARCH AND DEVELOPMENT
* * *

F-A2400
RESEARCH IN THE GENERAL FIELD
OF SUBSTRUCTURE AND DISLOCATION
NETWORKS IN METALLIC CRYSTALS.
(AFOSR-2574)
AD- 610 434

FRANKLIN INST RESEARCH LABS
PHILADELPHIA PA
* * *

I-82195-1
ETCH-PITTING CHARACTERISTICS OF
HIGH-PURITY MOLYBDENUM.
AD- 633 601

GENERAL DYNAMICS FORT WORTH TEX
CONVAIR AEROSPACE DIV
* * *

Nondestructive Testing
Techniques for Diffusion Bonded
Titanium Structures.
(GIDEP-E043-2093)
AD- 775 466

GENERAL DYNAMICS/ASTRONAUTICS SAN
DIEGO CALIF
* * *

GDA-ERR-AN-094
THE CHLORINE ETCHING OF SINGLE
CRYSTAL SILICON.
AD- 681 798

GENERAL DYNAMICS/CONVAIR SAN DIEGO
CALIF
* * *

CHEMICAL MILLING HIGH-
TEMPERATURE ALLOYS AND STEELS.
AD- 829 039

Second Surface Thermal Control
Mirrors for Reflection Control.
Volume I.
(SAMSO-TR-76-92-VOL-1)
AD-A034 863

GDC-PR919
REDUCING HAND STRAIGHTENING BY
CHEM-MILLING 7075 AND 7178 ALUMINUM
ALLOY IN THE 'W' (OR NATURALLY
AGED) CONDITION.
AD- 677 066

GENERAL ELECTRIC CO SCHENECTADY N Y
RESEARCH AND DEVELOPMENT CENTER
* * *
PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 631 330

PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 635 143

S-67-1007
PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 809 337

GENERAL TELEPHONE AND ELECTRONICS LABS
INC BAYSIDE N Y BAYSIDE RESEARCH
CENTER
* * *

GT/E-TR-69-832.2
High Capacitance Thin Film
Structures.
(ECOM-0194-2)
AD- 863 068

GEORGIA INST OF TECH ATLANTA SCHOOL
OF CHEMICAL ENGINEERING
* * *

TR-74-1
Thermal Etching of Beta Ti-V

CORP AUTHOR-MONITOR AGENCY-5
UNCLASSIFIED ZOM08

Alloys.
AD- 772 045

GRUMMAN AEROSPACE CORP BETHPAGE N Y
* * *
Advanced Chemical Milling
Processes.
(AFML-TR-71-44)
AD- 727 620

HARRY DIAMOND LABS ADELPHI MD
* * *
HDL-TM-75-23
Tantalum Nitride Thin-Film
Ratiometer for Electronic Timer of
XM732 Proximity Fuze.
AD-A020 670

HDL-TM-77-8
* * *
A Study of Fineblanking for the
Manufacture of Fluoric Laminar
Proportional Amplifiers.
AD-A040 230

HARRY DIAMOND LABS WASHINGTON D C
* * *

HDL-TM-74-24
Design and Fabrication of a
Thin-Film Ratiometer for Electronic
Timer of XM732 Proximity Fuze.
(GIDEP-661.45.51.30-N3-01)
AD-A005 615

HARSHAW CHEMICAL CO CLEVELAND OHIO
* * *
RESEARCH ON PHOTOVOLTAIC CELLS.
(ARL-65-111)
AD- 621 454

HP ASSOCIATES PALO ALTO CALIF
* * *
SEMICONDUCTOR MATERIALS.
AD- 625 676

HUGHES AIRCRAFT CO FULLERTON CALIF
* * *
FR 79-12-190
Semi-Additive Processes for
Fabrication of Printed Wiring
Boards.
AD-A075 975

RAN-UGH

UNCLASSIFIED

<p> III RESEARCH INST CHICAGO ILL *** IIIRI-86080-4 FRACTURE MECHANISMS IN POLYCRYSTALLINE NONMETALLIC MATERIALS. (AMRC-CR-69-02(F)) AD- 686 301 </p>	<p> CF-2884 THIN FILM CIRCUIT TECHNIQUES, AD- 654 427 CF-3034 A MINIATURE MONOSTRIP NANOSCOND PULSE DELAY LINE, AD- 650 977 TG-327 SHORT CUT TO PRINTED CIRCUIT PROTOTYPES, AD- 626 616 TG-858 ADVANCEMENTS IN SPACE FLIGHT HARDWARE THROUGH CHEMICAL MILLING. AD- 804 296 </p>	<p> LOCKHEED MISSILES AND SPACE CO PALO ALTO CALIF LOCKHEED RESEARCH LAB *** ILLUMINATION AND THE PHOTOENGRAVING OF SILICON, AD- 687 644 MARTIN MARIETTA AEROSPACE ORLANDO FLA *** OR-12332 Manufacturing Methods and Technology Study Covering Methods for Manufacturing Electronic Modules. Manufacturing Methods for Electronic Modules. (ILS-4-72) AD- 768 855 </p>
<p> ILLINOIS UNIV URBANA DEPT OF METALLURGY AND MINING ENGINEERING *** SPARK EROSION CUTTING OF GERMANIUM. AD- 708 756 Dislocation Velocity Measurements in High Purity Niobium. AD- 769 129 Dislocation Etch Pitting in High-Purity Niobium. AD- 772 617 </p>	<p> LASER DIODE LABS INC METUCHEN N J *** Light Emitting Diodes for Fiber Optic Communications. AD-A043 727 Light Emitting Diodes for Fiber Optic Communications. AD-A068 348 Light Emitting Diodes for Fiber Optic Communications. AD-A071 158 </p>	<p> MASSACHUSETTS INST OF TECH CAMBRIDGE CENTER FOR MATERIALS SCIENCE AND ENGINEERING *** TR-7 Heterogeneities in Carbon Fibers. AD-A013 666 MASSACHUSETTS INST OF TECH CAMBRIDGE CHARLES STARK DRAPER LAB *** R-748 Advanced Inertial Technologies. Volume I. (AFAL-TR-73-124-VOL-1) AD- 911 088 </p>
<p> INTERACTIVE RADIATION INC NORTHVALE NJ *** High Performance Pyroelectric Materials. AD-A049 204 INTERNATIONAL BUSINESS MACHINES CORP HOPWELL JUNCTION N Y EAST FISHKILL LAB *** TR-1 Damage Profiles in Silicon and their Impact on Device Reliability. AD- 756 250 </p>	<p> LEHIGH UNIV BETHLEHEM PA DEPT OF METALLURGY AND MATERIALS SCIENCE *** REPLICATION OF FINE STRUCTURE IN MARTENSITE, (AROD-4806:1) AD- 644 652 LINCOLN LAB MASS INST OF TECH LEXINGTON *** JA-2092 CHEMICAL BEHAVIOUR OF SEMICONDUCTORS: ETCHING CHARACTERISTICS. (ESD-TR-66-171) AD- 633 185 </p>	<p> MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF MATERIALS SCIENCE AND ENGINEERING *** TR-10 Oxidative Stabilization of Acrylic Fibers. I. Oxygen Uptake and General Model. AD-A055 071 MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF METALLURGY AND MATERIALS SCIENCE *** TR-4 </p>
<p> JOHNS HOPKINS UNIV BALTIMORE MD LAB OF ASTROPHYSICS AND PHYSICAL METEOROLOGY *** DEVELOPMENT OF DIFFRACTION GRATINGS FOR THE FAR ULTRAVIOLET. (AFCLR-67-0294) AD- 655 098 JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS LAB </p>	<p> CORP AUTHOR-MONITOR AGENCY-6 UNCLASSIFIED ZOM08 IT -ASS </p>	

UNCLASSIFIED

Ion Etching of Amorphous and Semicrystalline Fibers. AD-A004 859	MS-3649 Ion-Beam Etching of Surface Gratings. (ESD-TR-74-155) AD-A000 502	AD-A044 951 MCMASTER UNIV HAMILTON (ONTARIO) * * * TR-10 A STUDY OF LITHIUM FLUORIDE ETCH MORPHOLOGIES USING SILICA GEL. AD- 660 381 * * * TR-11 ON THE SLOPE OF ETCH PITS. AD- 665 280 MICROWAVE ASSOCIATES INC BURLINGTON MASS * * * Production Engineering Measure for Low Noise Solid-State Oscillator. (ECOM-5861-5-72) AD-A009 776
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF ELECTRONICS * * * Thin-Film Dye Laser with Etched Cavity. AD-A033 803	MS-3979 Surface-Wave Resonators Using Grooved Reflectors. (ESD-TR-75-288) AD-A017 356 * * * MS-4105 Techniques for Making Gap- Coupled Acoustoelectric Devices. (ESD-TR-76-267) AD-A031 719 * * * MS-4169 Ion Beam Etching. (ESD-TR-76-386) AD-A041 620 * * * TN-1973-38 Fabrication Procedure for Silicon Membrane X-Ray Lithography Masks. (ESD-TR-73-248) AD- 769 857 * * * TR-526 Modal Analysis of SAW Convolver. (ESD-78-3) AD-A056 809	MISSOURI UNIV COLUMBIA SPACE SCIENCES RESEARCH CENTER * * * Chronic Oxygen Electrodes - A Feasibility Study. AD- 748 422 MISSOURI UNIV ROLLA * * * TR-16 ANODIC BEHAVIOR OF GAAS SINGLE CRYSTALS AT INCREASED CURRENT DENSITIES IN ALKALINE AND ACIDIC SOLUTIONS. AD- 652 300 MITRE CORP BEDFORD MASS * * * W-06760 FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION. (ESD-TDR-64-634) AD- 464 486 MONSANTO RESEARCH CORP ST LOUIS MO * * * HPC-70-126 An Experimental Technique for ASS-ONS
MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB * * * Enhanced Heteroepitaxy. (ESD-TR-79-193) AD-A075 514 * * * JA-2390 ELECTROCHEMICAL DEMBER EFFECT IN SEMICONDUCTORS, AD- 614 180 * * * JA-3240 LONG-WAVELENGTH INFRARED PB(1- X)SN(X)TE DIODE LASERS. (ESD-TR-68-223) AD- 673 601 * * * JA-3406 METHOD FOR FABRICATING HIGH FREQUENCY SURFACE WAVE TRANSDUCERS. (ESD-TR-69-231) AD- 693 812 * * * JA-4432 Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium. (ESD-TR-75-198) AD-A013 949 * * * MS-3413 Ion Beam Etching of Reflective Array Filters. (ESD-TR-72-370) AD- 758 934	MATERIALS RESEARCH LAB INC GLENWOOD ILL * * * Fracturing Characteristics of Adhesive Joints. AD-A075 541 MATERIALS RESEARCH LABS MARIBYRNONG (AUSTRALIA) * * * MRL-R-681 Gas Washing of Fracture Surfaces by Explosive Detonation Products. CORP AUTHOR-MONITOR AGENCY-7 UNCLASSIFIED ZOM08	

UNCLASSIFIED

Monitoring Dynamic Cracks. AD- 754 762	OTTAWA (ONTARIO) DIV OF MECHANICAL ENGINEERING * * *	USNRDL-TR-1089 A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS. AD- 643 540
MOTOROLA INC PHOENIX ARIZ SEMICONDUCTOR PRODUCTS DIV * * *	DME/NAE-1969(1) QUARTERLY BULLETIN OF THE DIVISION OF MECHANICAL ENGINEERING AND THE NATIONAL AERONAUTICAL ESTABLISHMENT. AD- 689 274	NAVAL RESEARCH LAB WASHINGTON D C * * *
PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS. AD- 619 295	PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND INCREASE THE RELIABILITY OF THE 2N328A TRANSISTOR. AD- 614 823	NRL-6622-PT-1 ON THE ACTIVITY OF PLATINUM CATALYSTS IN SOLUTION. PART I. EFFECTS OF THERMAL TREATMENT AND CHEMICAL ETCHING ON THE PT- O/HYDROGEN SPECIFIC REACTION RATE. AD- 664 490
PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS. AD- 635 814	NATIONAL SEMICONDUCTOR CORP DANBURY CONN * * *	NRL-6635 ENVIRONMENTALLY ASSISTED CRACK GROWTH IN GLASS. AD- 663 885
PRODUCTION ENGINEERING MEASURE FOR SILICON NPN SWITCHING TRANSISTORS. AD- 637 114	PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND INCREASE THE RELIABILITY OF THE 2N328A TRANSISTOR. AD- 614 823	NRL-MR-3220 Replica Techniques for Transmission Electron Microscopy. AD-A021 891
Reliability Study of Doped Aluminum Conductor Films. (RADC-TR-77-410) AD-A050 677	NAVAL ORDNANCE LAB WHITE OAK MD * * *	NRL-MR-3845 Electronic Materials Technology (Semiconductors). AD-A060 363
NARMCO RESEARCH AND DEVELOPMENT DIV WHITTAKER CORP SAN DIEGO CALIF * * *	NOLTR-66-32 POLISHES AND ETCHES FOR TIN TELLURIDE, LEAD SULFIDE, LEAD SELENIDE, AND LEAD TELLURIDE: SUPPLEMENT. AD- 634 392	NAVAL WEAPONS CENTER CHINA LAKE CALIF * * *
RESEARCH ON RESIN-IMPREGNATED, COLLIMATED BORON FILAMENTS AND IMPROVED HIGH-MODULUS, HIGH- STRENGTH FILAMENTS AND COMPOSITES. (AFML-TR-65-382) AD- 477 816	NOLTR-72-32 Carbon Fiber Microstructure. AD- 740 315	NWC-TP-5929 Electron Resists. (GIDEP-E085-1600) AD-A044 282
NATIONAL BUREAU OF STANDARDS WASHINGTON D C INST FOR MATERIALS RESEARCH * * *	NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF * * *	NEW YORK UNIV N Y * * *
FRACTURE OF SAPPHIRE, (AROD-5724:6-MC) AD- 696 910	USNRDL-TR-68-14 A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE. AD- 666 543	HYDROGEN-INDUCED EXPANSIONS IN TITANIUM-ALUMINUM ALLOYS, (AROD-2513:1) AD- 678 722
NATIONAL MATERIALS ADVISORY BOARD (NAS- NAE) WASHINGTON D C * * *	USNRDL-TR-68-136 CHARGED PARTICLE TRACKS IN POLYMERS NO. 7: SENSITIVITY ENHANCEMENT OF LEXAN, AD- 682 922	NEW YORK UNIV N Y RESEARCH DIV * * *
NWAB-311 Alternate Production Processes for Fuse Pinions. AD- 777 000	USNRDL-TR-1088 RANGE AND DEPTH DOSE DISTRIBUTION OF LOW ENERGY CHARGED PARTICLES IN DOSIMETRY GLASSES. AD- 642 794	A STUDY OF THE CRYSTAL STRUCTURE OF TI-AL ALLOYS AND
NATIONAL RESEARCH COUNCIL OF CANADA	CORP AUTHOR-MONITOR AGENCY-8 UNCLASSIFIED ZOM08	OTO-EM

UNCLASSIFIED

HYDROGEN INDUCED EXPANSIONS.
(AROD-2513:1)
AD- 801 472

NORTH CAROLINA UNIV AT CHAPEL HILL
WILLIAM R KENAN JR LABS OF
CHEMISTRY
* * *

TR-6
Chemically Modified Electrodes.
XIV. Attachment of Reagents to
Oxide-Free Glassy Carbon Surfaces.
Electroactive RF Polymer Films on
Carbon and Platinum Electrodes.
AD-A061 427

NORTHROP CORP HANTHORNE CALIF
AIRCRAFT DIV
* * *

NOR-75-33
Anodic Etching - A Method of
Detecting Grinding Burns on
Chromium Plated Steel Parts.
AD-A017 689
* * *

NOR-75-51
Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-Weld
Bonding.
(AFML-TR-75-69)
AD-8008 190

OHIO STATE UNIV RESEARCH FOUNDATION
COLUMBUS
* * *

OSURF-2966-TR-4
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

OXFORD UNIV (ENGLAND) ENGINEERING
LAB
* * *

FIELD EMISSION FROM CADMIUM
SULPHIDE,
(AFOSR-67-0317)
AD- 646 957

PERKIN-ELMER CORP NORWALK CONN
* * *

THE PREPARATION OF ORIENTED
SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE
RARE EARTH AND IRON GROUP METALS.
(AFML-TR-65-390)
AD- 637 803
* * *

PE-11934
Thin Film Optical Waveguide
Technology.
(AFAL-TR-74-60)
AD- 919 567
* * *

PE-11991
Diffraction Grating
Development.
(AFWL-TR-74-218)
AD-A008 199

PICATINNY ARSENAL DOVER N J
* * *

PA-TR-4861
A Chromate-Free Process for
Preparing Aluminum Substrates for
Adhesive Bonding -- A Preliminary
Study.
(GIDEP-E063-0094)
AD-A029 196

RADIO CORP OF AMERICA NEW YORK
ADVANCED COMMUNICATIONS LAB
* * *

CR-67-565-35
MICROMINIATURE MONOLITHIC
CROSSPOINT INTERCONNECTIONS.
(ECOM-02260-F)
AD- 664 126

RADIO CORP OF AMERICA SOMERVILLE N J
DEFENSE MICROELECTRONICS
* * *

HIGH PERFORMANCE THIN FILMS FOR
MICROCIRCUITS.
(ECOM-01230-10)
AD- 662 748

RADIO CORP OF AMERICA SOMERVILLE N J
ELECTRONIC COMPONENTS AND DEVICES
* * *

300 C SEMICONDUCTOR FOR POWER
DEVICES.

CORP AUTHOR-MONITOR AGENCY-9
UNCLASSIFIED ZOMOS

AD- 915 000

RAYTHEON CO MOUNTAIN VIEW CALIF
SEMICONDUCTOR OPERATIONS
* * *

SILICON, PNP, MEKA TRANSISTOR
TYPES JAN 2N328A AND JAN 2N329A.
AD- 636 762
* * *

SILICON, PNP, MEKA TRANSISTOR,
TYPES 2N328A JAN AND 2N329A JAN.
AD- 637 020
* * *

RAYTHEON CO WALTHAM MASS RESEARCH
DIV
* * *

S-975
STUDY OF MICROWAVE GENERATION
BY MEANS OF INTERACTION WITH
ANISOTROPIC MEDIA.
(ECOM-01314-8)
AD- 818 789
* * *

S-1075
CHEMICAL VAPOR DEPOSITED
MATERIALS FOR ELECTRON TUBES.
(ECOM-0156-1)
AD- 672 095

RAYTHEON CO WALTHAM MASS SPECIAL
MICROWAVE DEVICES
* * *

0877-1393-VOL-1
Manufacturing Methods and
Technology Engineering High-
Efficiency, High-Power Gallium
Arsenide Read-Type IMPATT Diodes.
Volume I.
AD-A048 578

RCA ADVANCED TECHNOLOGY LABS CAMDEN N
J
* * *

Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
(AFAL-TR-73-258)
AD- 912 475

RCA ELECTRONIC COMPONENTS SOMERVILLE N
J
* * *

ORT-CA

UNCLASSIFIED

5-Kilowatt, 1-Kilovolt,
Laminated Sonar Transistor.
AD- 860 343

RCA LABS PRINCETON N J
* * *
INTEGRATED LOGIC NETWORKS.
(AFRL-68-0516)
AD- 680 411

PRRL-77-R-45
* * *
Hyperabrupt Varactor Voltage-
Controlled Oscillators.
AD-A047 522

PRRL-78-CR-22
* * *
III-V Heterojunction Structures
for Long-Wavelength Injection
Laser.
(ECOM-76-0872-5)
AD-A054 670

RCA LABS DIV RADIO CORP OF AMERICA
PRINCETON N J
* * *
IMPROVED THIN-FILM SOLAR CELLS.
(AFAPL-TR-65-123)
AD- 476 696

RCA SOLID STATE TECHNOLOGY CENTER
SOMERVILLE N J
* * *
High-Reliability, Low-Cost
Integrated Circuits.
AD-A045 089

High-Reliability, Low-Cost
Integrated Circuits.
AD-A049 763

RENSELAER POLYTECHNIC INST TROY N Y
* * *
Research on Microwave Junction
Gate Field Effect Transistors.
(ARQ-13586.5-EL)
AD-A080 031

RENSELAER POLYTECHNIC INST TROY N Y
* * *
TR-2

PRINCIPLES OF METALLOGRAPHIC
ETCHING.
AD- 616 786

RENSELAER POLYTECHNIC INST TROY N Y
DEPT OF ELECTRICAL AND SYSTEMS
ENGINEERING * * *
Vapor-Phase Etching and
Polishing of GaAs Using Arsenic
Trichloride.
(ARQ-13586.2-EL)
AD-A051 568

RENSELAER POLYTECHNIC INST TROY N Y
DEPT OF MATERIALS ENGINEERING
* * *
Chemical Durability Improvement
and Static Fatigue of Glasses.
AD-A066 978

RENSELAER POLYTECHNIC INST TROY N Y
MATERIALS DIV * * *
The Rate of Dissolution of
Amorphous Silica in Water.
Inaccessibility of Crack Tips in
Glass.
AD- 762 767

Fracture Strength of Soda-Lime
Glass after Etching.
AD- 783 086

RESEARCH TRIANGLE INST DURHAM N C
* * *
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
(ASD-TDR-63-316-VOL-10)
AD- 626 985

ROCK ISLAND ARSENAL IL ENGINEERING
DIRECTORATE * * *
SARRI-EN-TR-79-04
Automated Chromium Plating Line
for Gun Barrels.
AD-A079 528

CORP AUTHOR-MONITOR AGENCY-10
UNCLASSIFIED ZOM08

ROCKWELL INTERNATIONAL ANAHEIM CALIF
ELECTRONICS RESEARCH DIV
* * *
C75-633/501
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
(AFRL-TR-75-0413)
AD-A021 905

C76-142/501
* * *
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
(RADC-TR-76-208)
AD-A030 777

SCIENTIFIC-1
* * *
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
(AFRL-TR-75-0413)
AD-A021 905

SCIENTIFIC-2
* * *
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
(RADC-TR-76-208)
AD-A030 777

ROCKWELL INTERNATIONAL THOUSAND OAKS
CA SCIENCE CENTER
* * *
SC5180.17FTR
Surface Treatment for Aluminum
Bonding.
AD-A076 950

ROCKWELL INTERNATIONAL CORP ANAHEIM
CALIF AUTONETICS DIV
* * *
C73-892.4/201
Investigation of Advanced
Protective and Antireflection
Coatings for Halide Optics.
(AFRL-TR-74-0551)
AD-A003 631

ROME AIR DEVELOPMENT CENTER GRIFFISS
AFB N Y RELIABILITY BRANCH
* * *
RADC-TR-65-439
DEVELOPMENT OF A
MICROELECTRONICS CAPABILITY AND

CA -ONE

UNCLASSIFIED

FACILITY AT RADC.
AD- 484 781

ROME AIR DEVELOPMENT CENTER GRIFFISS
AFB N Y

RADC-TR-72-118
Thin Film Hybrid Pulse Width
Discriminator Circuit Fabrication.
AD- 900 343

SASKATCHEWAN UNIV SASKATOON
A Double-Etching Technique for
Microstructural Analysis of Steel,
(DRB-REPRINT-4073)
AD-A082 873

SASKATCHEWAN UNIV SASKATOON COLL OF
ENGINEERING
ON THE USE OF COLOUR ETCHING
TECHNIQUES FOR STAINLESS STEELS
(ueber die Anwendung von
Farbaetzungen bei Rostfreien
Staehlen).
(DRB-REPRINT-3032)
AD- 699 723

AN ELECTRON-MICROSCOPICAL
EXAMINATION OF GRAYSON'S MICRO-
RULINGS.
AD- 699 991

SIGNETICS CORP SUNNYVALE CALIF
AN ECONOMICAL FLAT PACKAGE FOR
INTEGRATED CIRCUITS.
AD- 450 549

SILICON TRANSISTOR CORP GARDEN CITY N
Y
PRODUCTION ENGINEERING MEASURE
TO INCREASE THE RELIABILITY OF THE
TRANSISTOR TYPE 22N2034.
AD- 606 191

SOLAREX CORP ROCKVILLE MD
Nonreflecting Vertical Junction

Silicon Solar Cell Optimization.
(AFAPL-TR-78-91)
AD-A064 431

SPECTROLAB INC SYLMAR CALIF
380-4686F
Low Reflectivity Solar Cells.
(AFAPL-TR-75-98)
AD-A025 922

STANFORD RESEARCH INST MENLO PARK
CALIF
GASEOUS PRECISION ETCHING OF
MOLYBDENUM.
AD- 645 201

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-11)
AD- 668 242

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-12)
AD- 673 143

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-14)
AD- 681 892

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-15)
AD- 688 178

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-16)
AD- 691 130

HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
(ECOM-01261-5)
AD- 802 516

SCIENTIFIC-2
GROWTH, PROCESSING AND
CHARACTERIZATION OF BETA-SILICON
CORP AUTHOR-MONITOR AGENCY-11
UNCLASSIFIED 20M08

CARBIDE SINGLE CRYSTALS.
(AFCKL-68-0166)
AD- 669 099

STANFORD UNIV CALIF STANFORD
ELECTRONICS LABS
SU-SEL-75-034
Advanced Integrated-Circuit
Technology for Micropower ICs.
(Integrated Circuits).
(ECOM-72-0229F)
AD-A025 507

STANFORD UNIV CALIF INTEGRATED
CIRCUITS LAB
Advanced Technology for
Micropower Integrated Circuits.
(ECOM-72-0229-1)
AD-A005 629

STATE UNIV OF NEW YORK STONY BROOK
DEPT OF MATERIALS SCIENCE
MECHANISMS OF ATTACK ON GLASSES
IN AQUEOUS MEDIA.
AD- 641 500

STATE UNIV OF NEW YORK AT STONY BROOK
DEPT OF PHYSICS
Preparation of Variable
Thickness Microbridges Using
Electron Beam Lithography and Ion
Etching.
AD-A043 668

TEXAS INSTRUMENTS INC DALLAS
TI-03-72-25
Production Engineering Measure
for an Electron-Beam Machine and
Microwave Transistors.
AD- 900 280

TI-03-73-41
Silicone Diode Target Tube
Development.
(AFAL-TR-73-227)
AD- 912 287

OME-EXA

UNCLASSIFIED

TI-03-78-21 IC Fabrication Using Electron- Beam Technology. AD-A061 460	59-RD-F TRANSISTOR, VHF, SILICON, POWER (10W-500MC). AD- 622 879	Technology. AD-A029 510	TYCO LABS INC WALTHAM MASS ***
TI-03-78-32 IC Fabrication Using Electron- Beam Technology. AD-A061 721	THE INVESTIGATION OF SILICON CARBIDE BY A TRAVELLING SOLVENT METHOD. (AFCL-67-0271) AD- 654 305	03-67-31 INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. (ECOM-02029-4) AD- 653 628	UNIVERSITY COLL OF NORTH WALES BANGOR DEPT OF PHYSICS *** INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS. AD- 684 965
TI-03-78-51 IC Fabrication Using Electron- Beam Technology. (DELET-TR-76-8105-8) AD-A064 770	UNITED AIRCRAFT RESEARCH LABS EAST HARTFORD CONN *** UARL-N921820-4 Sputtering Technology for Improved Electron Devices. AD-B002 612	03-67-66 HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES. (ECOM-02029-5) AD- 661 042	VON KARMAN INST FOR FLUID DYNAMICS RHODE-SAINT-GENESE (BELGIUM) *** Study of the Switching Mechanism in Bistable Amplifiers with Application to Their Development, Optimization and Construction. AD-A036 266
TI-03-79-01 IC Fabrication Using Electron- Beam Technology. (DELET-TR-76-8105-9) AD-A068 656	UNIVERSAL ENERGY SYSTEMS INC DAYTON OHIO *** Surface Characterization of Chemically Treated Titanium and Titanium Alloys. (AFWL-TR-80-4004) AD-A084 171	TI-03-66-81 INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. (ECOM-02029-1) AD- 801 736	WALTER REED ARMY MEDICAL CENTER WASHINGTON D C ***
TI-03-79-57 IC Fabrication Using Electron- Beam Technology. (DELET-TR-76-8105-F) AD-A082 237		TI-03-66-130 INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. (ECOM-02029-2) AD- 645 047	
TI-08-65-99 DEVELOPMENT OF GALLIUM ARSENIDE- PHOSPHIDE GRADED BAND-GAP BASE TRANSISTOR STRUCTURES. AD- 467 531		TORONTO UNIV (ONTARIO) DEPT OF ELECTRICAL ENGINEERING *** V Groove M.O.S. Transistor Technology. AD- 773 296	
TEXAS INSTRUMENTS INC DALLAS CENTRAL RESEARCH LABS *** TI-08-74-09 Semiconductor-Insulator Structures for the 1- to 2- Micrometers Region. AD-A022 970		Moat-Etched Two-Phase Charge- Coupled Devices, AD- 782 980	
TI-08-76-05 Acoustic Ridge Waveguide Technology. AD-A020 745		TRW INC LAWDALE CALIF SEMICONDUCTOR DIV *** Monolithic 20W 2GHz Transistor and Monolithic 5W 4GHz Transistor. AD-A068 165	
TI-08-76-41 Acoustic Ridge Waveguide		TRW SEMICONDUCTORS INC LAWDALE CALIF RESEARCH AND DEVELOPMENT DEPT ***	
		CORP AUTHOR-MONITOR AGENCY-12 UNCLASSIFIED ZOM08	

EXA-ALT

UNCLASSIFIED

Acid Etch Characteristics of
Prismless Enamel.
AD-A024 730

WASHINGTON UNIV ST LOUIS MO LAB FOR
APPLIED ELECTRONIC SCIENCES

Fresnel Lens and Beam Control
in Optical Waveguide.
(AFOSR-TR-80-0042)
AD-A080 106

WATERLOO UNIV (ONTARIO) DEPT OF
MECHANICAL ENGINEERING

Observations on Grain Boundary
Etching Behavior and Its Relation
to Nonequilibrium Boundary Solute
Enrichment.
AD- 720 013

WATERTOWN ARSENAL LABS MASS

WAL-132/13
METALLOGRAPHIC METHODS ETCHING
FOR BAINITIC FINE CARBIDES. A
METALLOGRAPHIC METHOD FOR REVEALING
THE FINE CARBIDES IN BAINITE FORMED
DURING CONTINUOUS COOLING IN A
NICKEL-CHROMIUM-MOLYBDENUM
COMPOSITION.
AD- 629 644

WATERVLIET ARSENAL N Y

WVT-7029
METALLOGRAPHIC TECHNIQUE FOR
THE DEVELOPMENT OF MICROSTRUCTURAL
CONSTITUENTS IN GUN STEEL.
AD- 707 400

WATERVLIET ARSENAL N Y BENET R AND E
LABS

WVT-6916
BOND STRENGTH CHARACTERISTICS
OF ELECTRODEPOSITED NICKEL ON BORON
AND SILICON CARBIDE FILAMENTS
(REINFORCED COMPOSITES).
AD- 688 863

WESTINGHOUSE ELECTRIC CORP ELK RIDGE
MO MOLECULAR ELECTRONICS DIV

5377A
CONTINUOUS PROCESSES FOR
FUNCTIONAL ELECTRONIC BLOCKS.
(AFML-TR-65-398)
AD- 476 469

WESTINGHOUSE RESEARCH AND DEVELOPMENT
CENTER PITTSBURGH PA

The Implantation of Impurity
Ions and Proton Bombardment in
Indium Phosphide.
(AFOSR-TR-80-0044)
AD-A080 144

77-9F7-VNIST-R1
Gallium Arsenide Vertical
Channel Insulated Gate Field-Effect
Transistor.
AD-A047 108

243-023-T1
Indium Phosphide for High
Frequency Power Transistors.
AD-A079 812

*AERONAUTICAL SYSTEMS DIV WRIGHT-
PATTERSON AFB OH

ASD-TDR-63-316-VOL-10
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
AD- 626 985

*AEROSPACE RESEARCH LABS WRIGHT-
PATTERSON AFB OH

ARL-65-111
RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454

*AIR FORCE AERO PROPULSION LAB WRIGHT-
PATTERSON AFB OH

AFAPL-TR-65-123
IMPROVED THIN-FILM SOLAR CELLS.
AD- 654 305

CORP AUTHOR-MONITOR AGENCY-13
UNCLASSIFIED ZOM08

AD- 476 696

AFAPL-TR-75-98
Low Reflectivity Solar Cells.
AD-A025 922

AFAPL-TR-77-2
Integral, Low-Cost, High-
Temperature Turbine Feasibility
Demonstrator (Small Laminated Axial
Turbine Program).
AD-A038 674

AFAPL-TR-78-91
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431

*AIR FORCE AVIONICS LAB WRIGHT-
PATTERSON AFB OH

AFAL-TR-73-124-VOL-1
Advanced Inertial Technologies.
Volume I.
AD- 911 088

AFAL-TR-73-227
Silicone Diode Target Tube
Development.
AD- 912 287

AFAL-TR-73-258
Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
AD- 912 475

AFAL-TR-74-60
Thin Film Optical Waveguide
Technology.
AD- 919 567

*AIR FORCE CAMBRIDGE RESEARCH LABS
HANSCOM AFB MA

AFCL-67-3271
THE INVESTIGATION OF SILICON
CARBIDE BY A TRAVELLING SOLVENT
METHOD.
AD- 654 305

AFCL-67-0294

ASH-AIR

UNCLASSIFIED

Growth Characteristics of GaAs-
Ga(1-x)Al(x)As Structures
Fabricated by Liquid-Phase Epitaxy
Over Preferentially Etched
Channels.
AD-A026 425

AFML-77-71-44
Advanced Chemical Milling
Processes.
AD- 727 620

DEVELOPMENT OF DIFFRACTION
GRATINGS FOR THE FAR ULTRAVIOLET.
AD- 655 098

AFOSR-TR-77-0252
Modeling Validation. Techniques
and Applications for X-Ray
Lithography.
AD-A042 019

AFML-TR-75-69
Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-weld
Bonding.
AD-8008 190

AFCL-68-0166
GROWTH, PROCESSING AND
CHARACTERIZATION OF BETA-SILICON
CARBIDE SINGLE CRYSTALS.
AD- 669 099

AFOSR-TR-77-1109
Linearity and Enhanced
Sensitivity of the Shipley AZ-1350B
Photoresist.
AD-A045 389

AFML-TR-78-104
Anodize Optimization and
Adhesive Evaluations for Repair
Applications.
AD-A061 758

AFCL-72-0319
Analysis of Aluminum Oxide
Films on Silicon.
AD- 747 019

AFOSR-TR-78-0653
Line-Profile Resist Development
Simulation Techniques.
AD-A052 932

*AIR FORCE OFFICE OF SCIENTIFIC
RESEARCH BOLLING AFB DC
AFOSR-67-0317
FIELD EMISSION FROM CADMIUM
SULPHIDE.
AD- 646 957

AFCL-TR-74-0551
Investigation of Advanced
Protective and Antireflection
Coatings for Halide Optics.
AD-A003 631

AFOSR-TR-79-1123
A Geodesic Optical Waveguide
Lens Fabricated by Anisotropic
Etching.
AD-A078 202

AFOSR-67-2086
THE GROWTH AND ETCHING OF Si
THROUGH WINDOWS IN SiO₂.
AD- 658 248

AFCL-TR-75-0413
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
AD-A021 905

AFOSR-TR-80-0042
Fresnel Lens and Beam Control
in Optical Waveguide.
AD-A080 106

AFOSR-2574
RESEARCH IN THE GENERAL FIELD
OF SUBSTRUCTURE AND DISLOCATION
NETWORKS IN METALLIC CRYSTALS.
AD- 610 434

*AIR FORCE MATERIALS LAB WRIGHT-
PATTERSON AFB OH
AFML-TR-65-382
RESEARCH ON RESIN-IMPREGNATED,
COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

AFOSR-TR-80-0044
The Implantation of Impurity
Ions and Proton Bombardment in
Indium Phosphide.
AD-A080 144

AFOSR-TR-75-0081
Theoretical Study and
Experimental Development of Thin-
Film Lasers and Modulators for use
in Integrated Optics.
AD-A004 138

AFML-TR-65-390
THE PREPARATION OF ORIENTED
SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE
RARE EARTH AND IRON GROUP METALS.
AD- 637 803

*AIR FORCE WEAPONS LAB KIRTLAND AFB NM
AFML-TR-74-218
Diffraction Grating
Development.
AD-A008 199

AFOSR-TR-75-1695
Properties of Infrared Cat-
Whisker near 10.6 Microns.
AD-A015 492

AFML-TR-65-398
CONTINUOUS PROCESSES FOR
FUNCTIONAL ELECTRONIC BLOCKS.
AD- 476 469

AFML-TR-76-62
The Effects of Surface
Structural Properties on Laser-
AD- 476 469

AFOSR-TR-76-0971
CORP AUTHOR-MONITOR AGENCY-14
UNCLASSIFIED ZOMOB

AFML-TR-65-398
CONTINUOUS PROCESSES FOR
FUNCTIONAL ELECTRONIC BLOCKS.
AD- 476 469

AIR-AIR

UNCLASSIFIED

Induced Damage at 1.06 Micrometers.
AD-A019 325

*AIR FORCE WRIGHT AERONAUTICAL LABS
WRIGHT-PATTERSON AFB OH

AFWAL-TR-80-4004
Surface Characterization of
Chemically Treated Titanium and
Titanium Alloys.
AD-A084 171

*ARMY ELECTRONICS COMMAND FORT
MONMOUTH NJ

ECOM-72-0229-1
Advanced Technology for
Micropower Integrated Circuits.
AD-A005 629

ECOM-72-0229F
Advanced Integrated-Circuit
Technology for Micropower ICs.
(Integrated Circuits).
AD-A025 507

ECOM-76-0872-5
III-V Heterojunction Structures
for Long-Wavelength Injection
Laser.
AD-A054 670

ECOM-0156-1
CHEMICAL VAPOR DEPOSITED
MATERIALS FOR ELECTRON TUBES.
AD- 672 095

ECOM-0194-2
High Capacitance Thin Film
Structures.
AD- 863 068

ECOM-01230-10
HIGH PERFORMANCE THIN FILMS FOR
MICROCIRCUITS.
AD- 662 748

ECOM-01261-5
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 802 516

ECOM-01261-11
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 668 242

ECOM-01261-12
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 673 143

ECOM-01261-14
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 681 892

ECOM-01261-15
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 688 178

ECOM-01261-16
HIGH-INFORMATION-DENSITY
STORAGE SURFACES.
AD- 691 130

ECOM-01314-8
STUDY OF MICROWAVE GENERATION
BY MEANS OF INTERACTION WITH
ANISOTROPIC MEDIA.
AD- 818 789

ECOM-02024-1
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 639 068

ECOM-02024-5
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 667 368

ECOM-02029-1
INTEGRATED CIRCUITS FOR
PORTABLE RADAR EQUIPMENT.
AD- 801 736

ECOM-02029-2
INTEGRATED CIRCUITS FOR
PORTABLE RADAR EQUIPMENT.
AD- 645 047

ECOM-02029-4
INTEGRATED CIRCUITS FOR
PORTABLE RADAR EQUIPMENT.
AD- 653 628

ECOM-02029-5
HETEROCRYSTAL INTEGRATED
CIRCUIT TECHNIQUES.
AD- 661 042

ECOM-02260-F
MICROMINIATURE MONOLITHIC
CROSSPOINT INTERCONNECTIONS.
AD- 664 126

ECOM-5861-S-72
Production Engineering Measure
for Low Noise Solid-State
Oscillator.
AD-A009 776

*ARMY ELECTRONICS RESEARCH AND
DEVELOPMENT COMMAND FORT MONMOUTH
NJ ELECTRONICS TECHNOLOGY/DEVICES
LAB

DELET-TR-76-8105-8
IC Fabrication Using Electron-
Beam Technology.
AD-A064 770

DELET-TR-76-8105-9
IC Fabrication Using Electron-
Beam Technology.
AD-A068 656

DELET-TR-76-8105-F
IC Fabrication Using Electron-
Beam Technology.
AD-A082 237

*ARMY MATERIALS AND MECHANICS RESEARCH
CENTER WATERTOWN MA

AMMRC-CR-69-02(F)
FRACTURE MECHANISMS IN
POLYCRYSTALLINE NONMETALLIC
MATERIALS.
AD- 686 301

CORP AUTHOR-MONITOR AGENCY-15
UNCLASSIFIED ZOM08

AIR-ARM

UNCLASSIFIED

<p>•ARMY MISSILE COMMAND RESTONE ARSENAL AL PRODUCTION DIV * * *</p> <p>ILS-4-72 Manufacturing Methods and Technology Study Covering Methods for Manufacturing Electronic Modules. Manufacturing Methods for Electronic Modules. AD- 768 855</p> <p>•ARMY RESEARCH OFFICE RESEARCH TRIANGLE PARK NC * * *</p> <p>ARO-8733.10-P Properties of Infrared Cat- Whisker near 10.6 Microns. AD-A015 492</p> <p>ARO-9603.1-P The Growth and Characterization of Potassium and Rubidium Azide Single Crystals. AD-A032 619</p> <p>ARO-11833.3-EL Grating Masks Suitable for Ion- Beam Machining and Chemical Etching. AD-A005 095</p> <p>ARO-11833.9-EL Optical Waveguides Fabricated by Preferential Etching. AD-A013 153</p> <p>ARO-11833.18-EL Profile and Groove-Depth Control in GaAs Diffraction Gratings Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System. AD-A026 428</p> <p>ARO-11833.27-EL Growth Characteristics of GaAs- Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels. AD-A026 425</p>	<p>* * *</p> <p>ARO-11833.33 Preferential Chemical Etching of Blazed Gratings in (110)- Oriented GaAs. AD-A074 282</p> <p>* * *</p> <p>ARO-13586.2-EL Vapor-Phase Etching and Polishing of GaAs Using Arsenic Trichloride. AD-A051 568</p> <p>* * *</p> <p>ARO-13586.5-EL Research on Microwave Junction Gate Field Effect Transistors. AD-A080 031</p> <p>* * *</p> <p>AROD-2513:1 HYDROGEN-INDUCED EXPANSIONS IN TITANIUM-ALUMINUM ALLOYS. AD- 678 722</p> <p>* * *</p> <p>AROD-2513:1 A STUDY OF THE CRYSTAL STRUCTURE OF Ti-AL ALLOYS AND HYDROGEN INDUCED EXPANSIONS. AD- 801 472</p> <p>* * *</p> <p>AROD-4806:1 REPLICATION OF FINE STRUCTURE IN MARTENSITE. AD- 644 652</p> <p>* * *</p> <p>AROD-5724:6-MC FRACTURE OF SAPPHIRE. AD- 696 910</p> <p>*DEFENCE RESEARCH BOARD OTTAWA (ONTARIO) * * *</p> <p>DRB-REPRINT-3032 ON THE USE OF COLOUR ETCHING TECHNIQUES FOR STAINLESS STEELS (Ueber die Anwendung von Farbaetzungen bei Rostfreien Stählen). AD- 699 723</p> <p>* * *</p> <p>DRB-REPRINT-4073 A Double-Etching Technique for CORP AUTHOR-MONITOR AGENCY-16 UNCLASSIFIED ZOM08</p>	<p>Microstructural Analysis of Steel. AD-A082 873</p> <p>*ELECTRONIC SYSTEMS DIV HANSCOM AFB MA * * *</p> <p>ESD-78-3 Modal Analysis of SAW Convolver. AD-A056 809</p> <p>* * *</p> <p>ESD-TDR-64-634 FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION. AD- 464 486</p> <p>* * *</p> <p>ESD-TR-66-171 CHEMICAL BEHAVIOUR OF SEMICONDUCTORS: ETCHING CHARACTERISTICS. AD- 633 185</p> <p>* * *</p> <p>ESD-TR-68-223 LONG-WAVELENGTH INFRARED Pb(1- X)Sn(X)Te DIODE LASERS. AD- 673 601</p> <p>* * *</p> <p>ESD-TR-69-231 METHOD FOR FABRICATING HIGH FREQUENCY SURFACE WAVE TRANSDUCERS. AD- 693 812</p> <p>* * *</p> <p>ESD-TR-72-370 Ion Beam Etching of Reflective Array Filters. AD- 758 934</p> <p>* * *</p> <p>ESD-TR-73-248 Fabrication Procedure for Silicon Membrane X-Ray Lithography Masks. AD- 769 857</p> <p>* * *</p> <p>ESD-TR-74-155 Ion-Beam Etching of Surface Gratings. AD-A000 502</p> <p>* * *</p> <p>ESD-TR-75-198 Auger Spectroscopy Studies of</p>
--	--	--

ARM-ELE

UNCLASSIFIED

the Oxidation of Amorphous and Crystalline Germanium.
AD-A013 949 * * *

ESD-TR-75-288
Surface-Wave Resonators Using Grooved Reflectors.
AD-A017 356 * * *

ESD-TR-76-267
Techniques for Making Gap-Coupled Acoustoelectric Devices.
AD-A031 719 * * *

ESD-TR-76-388
Ion Beam Etching.
AD-A041 620 * * *

ESD-TR-79-193
Enhanced Heterosplaxy.
AD-A075 514 * * *

*FEDERAL AVIATION ADMINISTRATION
WASHINGTON DC OFFICE OF SUPERSONIC
TRANSPORT DEVELOPMENT * * *

FAA-SS-72-08-1
SST Technology Follow-On Program, Phase I. Compatibility of SST Materials with Titanium Alloys. Volume I. Flyaway Materials.
AD- 902 458 * * *

*GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM * * *

GIDEP-085.45.40.30-N5-01
A Chromate-Free Process for Preparing Aluminum Substrates for Adhesive Bonding -- A Preliminary Study.
AD-A029 196 * * *

GIDEP-556.45.30.00-EO-01
Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures.
AD- 775 466 * * *

GIDEP-661.45.51.30-N3-01
Design and Fabrication of a

Thin-Film Ratiometer for Electronic Timer of XM732 Proximity Fuze.
AD-A005 615 * * *

GIDEP-E043-2093
Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures.
AD- 775 466 * * *

GIDEP-E063-0094
A Chromate-Free Process for Preparing Aluminum Substrates for Adhesive Bonding -- A Preliminary Study.
AD-A029 196 * * *

GIDEP-E081-0133
Metal-Insulator-Semiconductor Studies of Lead Telluride.
AD-A038 996 * * *

GIDEP-E085-1600
Electron Resists.
AD-A044 282 * * *

GIDEP-E102-0129
Chromate-Free Method of Preparing Aluminum Surfaces for Adhesive Bonding. An Etchant Composition of Low Toxicity.
AD-A056 241 * * *

GIDEP-E123-0228
A Technique for Assessing the Durability of Structural Adhesives.
AD-A057 197 * * *

GIDEP-E140-0572
Surface Characterization of Titanium and Titanium Alloys. Part III. Effect on Ti (C.p.) and Ti-BMn of Laboratory Chemical Treatments.
AD-A032 954 * * *

GIDEP-E146-0330
A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.
AD-A065 360 * * *

CORP AUTHOR-MONITOR AGENCY-17
UNCLASSIFIED ZONOB

GIDEP-E146-1128
Surface Characterization of Titanium and Titanium Alloys. Part II. Effect on Ti-6Al-4V Alloy of Laboratory Chemical Treatments.
AD-A027 134 * * *

*GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM * * *

GIDEP-E146-1186
Anodize Optimization and Adhesive Evaluations for Repair Applications.
AD-A061 758 * * *

*ROME AIR DEVELOPMENT CENTER GRIFFISS
AFB NY * * *

RADC-TR-76-208
Investigation of Defects and Impurities in Silicon-on-Sapphire.
AD-A030 777 * * *

RADC-TR-77-410
Reliability Study of Doped Aluminum Conductor Films.
AD-A050 677 * * *

*SHARED BIBLIOGRAPHIC INPUT EXPERIMENT * * *

SBIE-AD-E400 160
Chromate-Free Method of Preparing Aluminum Surfaces for Adhesive Bonding. An Etchant Composition of Low Toxicity.
AD-A056 241 * * *

SBIE-AD-E400 171
A Technique for Assessing the Durability of Structural Adhesives.
AD-A057 197 * * *

SBIE-AD-E400 268
A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.
AD-A065 360 * * *

*SHIP STRUCTURE COMMITTEE WASHINGTON

FED-SHI

UNCLASSIFIED

DC

SSC-191
PLASTIC FLOW IN THE LOCALE ON
NOTCHES AND CRACKS IN F8-351 STEEL
UNDER CONDITIONS APPROACHING PLANE
STRAIN.
AD- 660 123

SPACE AND MISSILE SYSTEMS
ORGANIZATION LOS ANGELES CA

SAMSO-TR-68-29
ELIMINATION OF DAMAGE TO
METALLOGRAPH OBJECTIVE LENSES BY
ETCHANTS CONTAINING HYDROFLUORIC
ACID.
AD- 684 554

SAMSO-TR-68-165
ETCHING BEHAVIOR OF IN2O3 GROWN
FROM PbO-B2O3.
AD- 668 449

SAMSO-TR-68-220
CHEMICAL TINTING OF HAFNIUM AND
ZIRCONIUM CARBIDES FOR
METALLOGRAPHIC EXAMINATION.
AD- 671 925

SAMSO-TR-68-281
ETCHING AND REGROWTH OF CUPROUS
CHLORIDE.
AD- 674 757

SAMSO-TR-73-148
Coordination Chemistry and
Kinetics of Preferential Etching on
Surfaces of TiO2 (Rutile).
AD- 759 259

SAMSO-TR-76-92-VOL-1
Second Surface Thermal Control
Mirrors for Reflection Control.
Volume I.
AD-A034 883

SAMSO-TR-77-72
Metal-Insulator-Semiconductor
Studies of Lead Telluride.
AD-A038 996

CORP AUTHOR-MONITOR AGENCY-18
UNCLASSIFIED 20M08

SPA-SPA

UNCLASSIFIED

CHEMICAL MILLING
REDUCING HAND STRAIGHTENING BY
CHEM-MILLING 7075 AND 7178 ALUMINUM
ALLOY IN THE 'W' (OR NATURALLY
AGED) CONDITION.
AD- 677 066

CORROSION INHIBITION
Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-Weld
Bonding.
AD-8008 190

FINISHES
GRINDING AND POLISHING LARGE
PLATES FOR AIRCRAFT SKINS,
AD- 608 783

SURFACE PROPERTIES
HYDROGEN-INDUCED EXPANSIONS IN
TITANIUM-ALUMINUM ALLOYS,
AD- 678 722

*AMORPHOUS MATERIALS
Ion Etching of Amorphous and
Semicrystalline Fibers.
AD-A004 659

*ANISOTROPY
ELECTROMAGNETIC RADIATION
STUDY OF INTERACTION WITH
ANISOTROPIC MEDIA.
AD- 818 789

*ANODIC COATINGS
Anodize Optimization and
Adhesive Evaluations for Repair
Applications.
AD-A061 758

*ANTIREFLECTION COATINGS
Investigation of Advanced
Protective and Antireflection
Coatings for Halide Optics.
AD-A003 631
Low Reflectivity Solar Cells.
AD-A025 922

*AXIAL FLOW TURBINES

Integral, Low-Cost, High-
Temperature Turbine Feasibility
Demonstrator (Small Laminated Axial
Turbine Program).
AD-A038 674

*AZIDES
The Growth and Characterization
of Potassium and Rubidium Azide
Single Crystals.
AD-A032 619

*BEARINGS
METAL COATINGS
Plasma Babbitt Surfacing of the
Steel Base of Bearings.
AD- 750 517

*BERYLLIUM
METALLOGRAPHY
A REVIEW OF METALLOGRAPHIC
PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS,
AD- 674 066

*BERYLLIUM ALLOYS
METALLOGRAPHY
A REVIEW OF METALLOGRAPHIC
PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS,
AD- 674 066

*BIPOLAR TRANSISTORS
IC Fabrication Using Electron-
Beam Technology.
AD-A064 770

*BISTABLE DEVICES
Study of the Switching Mechanism
in Bistable Amplifiers with
Application to Their Development,
Optimization and Construction.
AD-A036 266

*BONDED JOINTS
Fracturing Characteristics of
Adhesive Joints.
AD-A075 541

*BORON
FIBERS

*RESEARCH ON RESIN-IMPREGNATED,
COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

FILAMENTS
BOND STRENGTH CHARACTERISTICS OF
ELECTRODEPOSITED NICKEL ON BORON
AND SILICON CARBIDE FILAMENTS
(REINFORCED COMPOSITES).
AD- 688 863

*BORON COMPOUNDS
SEMICONDUCTING FILMS
INVESTIGATION OF MATERIALS
SUITABLE FOR THE FABRICATION OF
SPACE CHARGE AMPLIFIERS.
AD- 684 965

*BRASS
DEFORMATION
Measurement of Deformation in
Alpha Brass by Means of an
Electrolytic Thiosulfate Etch.
AD- 742 198

*CADMIUM SELENIDES
ETCHED CRYSTALS
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

*CADMIUM SULFIDES
FIELD EMISSION
FIELD EMISSION FROM CADMIUM
SULPHIDE,
AD- 646 957

*CALIFORNIUM
Radiography with the Fission
Neutrons from Californium-252.
AD-A045 362

*CAPACITORS
RELIABILITY(ELECTRONICS)
Damage Profiles in Silicon and
their Impact on Device Reliability.
AD- 756 250

*CARBIDES

SUBJECT INDEX-2
UNCLASSIFIED ZOM08

AMO-CAR

UNCLASSIFIED

<p>ELECTRON MICROSCOPY Transmission Microscopy of Ion-Bombardment Thinned Boron Carbide. AD- 715 857</p> <p>ETCHING CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES FOR METALLOGRAPHIC EXAMINATION. AD- 671 925</p> <p>SINGLE CRYSTALS INVESTIGATION OF SINGLE-CRYSTAL DIMOLYBDENUM CARBIDE. AD- 803 613</p> <p>*CARBON Chemically Modified Electrodes. XIV. Attachment of Reagents to Oxide-Free Glassy Carbon Surfaces. Electroactive RF Polymer Films on Carbon and Platinum Electrodes. AD-A061 427</p> <p>*CARBON FIBERS Heterogeneities in Carbon Fibers. AD-A013 668</p> <p>MICROSTRUCTURE Carbon Fiber Microstructure. AD- 740 315</p> <p>*CARBON MONOXIDE The Adsorption of CO on Planar and Oxygen-Etched Silicon Surfaces. AD-A060 127</p> <p>*CATALYSTS PLATINUM ON THE ACTIVITY OF PLATINUM CATALYSTS IN SOLUTION. PART I. EFFECTS OF THERMAL TREATMENT AND CHEMICAL ETCHING ON THE PT-D/HYDROGEN SPECIFIC REACTION RATE. AD- 664 490</p> <p>*CAVITY RESONATORS Surface-Wave Resonators Using Grooved Reflectors. AD-A017 356</p>	<p>*CERAMIC COATINGS ALUMINA Analysis of Aluminum Oxide Films on Silicon. AD- 747 019</p> <p>*CHARGE COUPLED DEVICES Moat-Etched Two-Phase Charge-Coupled Devices. AD- 782 980</p> <p>*CHEMICAL ENGINEERING Preferential Chemical Etching of Blazed Gratings in (110)-Oriented GaAs. AD-A074 282</p> <p>*CHEMICAL MILLING ALLOYS PRINCIPLES OF METALLOGRAPHIC ETCHING. AD- 616 786</p> <p>ALUMINUM ALLOYS REDUCING HAND STRAIGHTENING BY CHEM-MILLING 7075 AND 7178 ALUMINUM ALLOY IN THE 'W' (OR NATURALLY AGED) CONDITION. AD- 677 066</p> <p>CRYSTALS POLISHES AND ETCHES FOR TIN TELLURIDE, LEAD SULFIDE, LEAD SELENIDE, AND LEAD TELLURIDE: SUPPLEMENT. AD- 634 392</p> <p>ETCHING ADVANCEMENTS IN SPACE FLIGHT HARDWARE THROUGH CHEMICAL MILLING. AD- 804 296</p> <p>HEAT RESISTANT ALLOYS CHEMICAL MILLING HIGH-TEMPERATURE ALLOYS AND STEELS. AD- 829 039</p> <p>REVIEWS CHEMICAL MILLING (DEEP CONTOUR ETCHING). AD- 680 561</p>	<p>TITANIUM ALLOYS Advanced Chemical Milling Processes. AD- 727 620</p> <p>*CHROMIUM ALLOYS Automated Chromium Plating Line for Gun Barrels. AD-A079 528</p> <p>*CIRCUIT INTERCONNECTIONS MANUFACTURING PLANAR COAXIAL INTERCONNECTION TECHNIQUES. AD- 639 068</p> <p>MICROELECTRONICS MICROMINIATURE MONOLITHIC CROSSPOINT INTERCONNECTIONS. AD- 664 126</p> <p>SANDWICH CONSTRUCTION PLANAR COAXIAL INTERCONNECTION TECHNIQUES. AD- 667 368</p> <p>*CIRCUITS FILMS THIN FILM CIRCUIT TECHNIQUES. AD- 654 427</p> <p>MICROELECTRONICS HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS. AD- 682 748</p> <p>PHOTOMETALLIC PROCESS INVESTIGATION. AD- 809 337</p> <p>*COMPLEMENTARY METAL OXIDE SEMICONDUCTOR High-Reliability, Low-Cost Integrated Circuits. AD-A049 763</p> <p>*COMPOSITE MATERIALS LAMINATED PLASTICS MECHANICAL BEHAVIOR OF BERYLLIUM WIRE REINFORCED PLASTIC COMPOSITES. PART II. TIME DEPENDENT MECHANICAL PROPERTIES. AD- 674 591</p>
--	--	--

SUBJECT INDEX-3
UNCLASSIFIED ZOMOB

CAR-COM

UNCLASSIFIED

REINFORCING MATERIALS
RESEARCH ON RESIN-IMPREGNATED,
COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

*COPPER COMPOUNDS
ETCHING
ETCHING AND REGROWTH OF CUPROUS
CHLORIDE,
AD- 674 757

*CORROSION INHIBITION
ALUMINUM ALLOYS
Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-Weld
Bonding.
AD-8008 190

*CORROSION RESISTANT ALLOYS
STEEL
APPLICATION OF THE POTENTIAL
POLARIZATION IN THE STUDY AND IN
THE METALLOGRAPHY OF CORROSION
RESISTANT STEELS.
AD- 841 860

*CRACK PROPAGATION
MONITORS
An Experimental Technique for
Monitoring Dynamic Cracks.
AD- 754 762

*CRACKS
GLASS
ENVIRONMENTALLY ASSISTED CRACK
GROWTH IN GLASS.
AD- 663 885

*CRYSTAL DEFECTS
DAMAGE
ELECTRONIC AND IONIC PROCESSES
IN SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES),
AD- 675 421

ETCHED CRYSTALS
ON THE SLOPE OF ETCH PITS.
AD- 665 280

*CRYSTAL FILTERS
VERY HIGH FREQUENCY
Mode Control and Related Studies
of VHF Quartz Filter Crystals,
AD- 736 758

*CRYSTAL GROWTH
The Growth and Characterization
of Potassium and Rubidium Azide
Single Crystals.
AD-A032 619
Electronic Materials Technology
(Semiconductors).
AD-A060 363

COPPER COMPOUNDS
ETCHING AND REGROWTH OF CUPROUS
CHLORIDE,
AD- 674 757

INTERMETALLIC COMPOUNDS
THE PREPARATION OF ORIENTED
SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE
RARE EARTH AND IRON GROUP METALS.
AD- 637 803

SILICON
THE GROWTH AND ETCHING OF SI
THROUGH WINDOWS IN SiD,
AD- 658 248

SILICON CARBIDES
GROWTH, PROCESSING AND
CHARACTERIZATION OF BETA-SILICON
CARBIDE SINGLE CRYSTALS,
AD- 669 099

*CRYSTAL RECTIFIERS
ETCHING
AU-ZNTE SCHOTTKY BARRIER
FABRICATION BY LOW-ENERGY ION
ETCHING TECHNIQUES.
AD- 833 283

*CRYSTAL STRUCTURE
FERRITES
DIRECT SOLUTION OF COMPLEX
CRYSTAL STRUCTURES BY ELECTRON
MICROSCOPY,
AD- 713 554

SUBJECT INDEX-4
UNCLASSIFIED ZOMOB

METAL CRYSTALS
RESEARCH IN THE GENERAL FIELD OF
SUBSTRUCTURE AND DISLOCATION
NETWORKS IN METALLIC CRYSTALS.
AD- 610 434

*CRYSTAL VIDEO RECEIVERS
Properties of Infrared Cat-
Whisker near 10.6 Microns,
AD-A015 492

*CRYSTALLOGRAPHY
Enhanced Heteroepitaxy.
AD-A075 514

*CRYSTALS
ELECTRON IRRADIATION
EFFECT OF KILOVOLT ELECTRONS ON
THE ETCH RATE OF Al2O3 AND Ta2O5,
AD- 696 861

PRECISION FINISHING
POLISHES AND ETCHES FOR TIN
TELLURIDE, LEAD SULFIDE, LEAD
SELENIDE, AND LEAD TELLURIDE:
SUPPLEMENT.
AD- 634 392

*DAMAGE
CRYSTAL DEFECTS
ELECTRONIC AND IONIC PROCESSES
IN SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES),
AD- 675 421

LITHIUM FLUORIDES
EFFECT OF DISLOCATION DENSITY ON
THE RADIATION EXPANSION OF THE
VOLUME OF CRYSTALS,
AD- 694 802

*DAMAGE ASSESSMENT
Sputter Damage in GaAs Exposed
to Low Energy Argon Ions.
AD-A080 119

*DATA STORAGE SYSTEMS
MICROELECTRONICS
HIGH-INFORMATION-DENSITY STORAGE
SURFACES.
AD- 668 242

COP-DAT

UNCLASSIFIED

- HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 673 143
- THIN FILM STORAGE DEVICES
- HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 681 892
- HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 688 178
- HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 691 130
- *DECOMPOSITION
PHOTOCHEMICAL REACTIONS
PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 809 337
- *DEFECTS(MATERIALS)
Investigation of Defects and Impurities in Silicon-on-Sapphire.
AD-A030 777
- *DEFORMATION
BRASS
Measurement of Deformation in Alpha Brass by Means of an Electrolytic Thiosulfate Etch.
AD- 742 198
- *DELAY LINES
Modal Analysis of SAW Convolver.
AD-A056 809
- MANUFACTURING
Fabrication of Elastic Surface Devices by Chemical Etching.
AD- 758 762
- MICROELECTRONICS
A MINIATURE MONOSTRIP NANOSECOND PULSE DELAY LINE.
AD- 650 977
- *DENTAL ENAMEL
Acid Etch Characteristics of Prismless Enamel.
AD-A024 730
- *DENTAL PROSTHESES
Acid Etch Characteristics of Prismless Enamel.
AD-A024 730
- High Temperature Microscopy of Porcelain-Precious Alloys.
AD-A039 647
- Criteria for Successful Composite Restorations.
AD-A071 064
- *DENTISTRY
Criteria for Successful Composite Restorations.
AD-A071 064
- *DIFFRACTION GRATINGS
Diffraction Grating Development.
AD-A008 199
- Profile and Groove-Depth Control in Gels Diffraction Gratings Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System.
AD-A026 428
- Modeling Validation, Techniques and Applications for X-Ray Lithography.
AD-A042 019
- MANUFACTURING
DEVELOPMENT OF DIFFRACTION GRATINGS FOR THE FAR ULTRAVIOLET.
AD- 655 098
- *DIFFUSION BONDING
Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures.
AD- 775 466
- *DIPOLE ANTENNAS
Properties of Infrared Cat-Whisker near 10.6 Microns.
AD-A015 492
- *DISCRIMINATORS
INTEGRATED CIRCUITS
Thin Film Hybrid Pulse Width Discriminator Circuit Fabrication.
AD- 900 343
- *DISLOCATIONS
Dislocation Etch Pitting in High-Purity Niobium.
AD- 772 617
- DENSITY
EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS.
AD- 694 802
- MOLYBDENUM
A STUDY OF DISLOCATION STRUCTURE OF SUBBOUNDARIES IN MOLYBDENUM SINGLE CRYSTALS.
AD- 675 563
- NIOBIUM
Dislocation Velocity Measurements in High Purity Niobium.
AD- 769 129
- RDX
DISLOCATION ETCHING OF CYCLOTRIMETHYLENE TRINITRAMINE CRYSTALS.
AD- 689 936
- *DISPLAY
SEMICONDUCTOR DIODES
SEMICONDUCTOR MATERIALS.
AD- 625 676
- *DOSE RATE
MEASUREMENT
RANGE AND DEPTH DOSE DISTRIBUTION OF LOW ENERGY CHARGED PARTICLES IN DOSIMETRY GLASSES.
AD- 642 794
- *DOSIMETERS
GLASS
RANGE AND DEPTH DOSE DISTRIBUTION OF LOW ENERGY CHARGED PARTICLES IN DOSIMETRY GLASSES.
AD- 642 794
- *DYE LASERS
Thin-Film Dye Laser with Etched Cavity.

SUBJECT INDEX-5
UNCLASSIFIED ZOM08

DEC-DYE

UNCLASSIFIED

AD-A033 803

*ELECTRIC CONDUCTORS

Reliability Study of Doped Aluminum Conductor Films.
AD-A050 677

*ELECTROACOUSTIC MATERIALS

Modal Analysis of SAW Convolver.
AD-A056 809

*ELECTROACOUSTICS

Techniques for Making Gap-Coupled Acoustoelectric Devices.
AD-A031 719

*ELECTROCHEMISTRY

SEMICONDUCTORS
ELECTROCHEMICAL DEMBER EFFECT IN SEMICONDUCTORS.
AD- 614 180

*ELECTRODEPOSITION

METAL COATINGS
Plasma Babbitt Surfacing of the Steel Base of Bearings.
AD- 750 517

*ELECTRODES

Chemically Modified Electrodes.
XIV. Attachment of Reagents to Oxide-Free Glassy Carbon Surfaces. Electroactive RF Polymer Films on Carbon and Platinum Electrodes.
AD-A061 427

PLASTIC COATINGS

Chronic Oxygen Electrodes - A Feasibility Study.
AD- 748 422

*ELECTROLUMINESCENCE

DISPLAY SYSTEMS
SEMICONDUCTOR MATERIALS.
AD- 625 376

*ELECTROLYTIC POLISHING

CRYSTALS
POLISHES AND ETCHES FOR TIN TELLURIDE, LEAD SULFIDE, LEAD SELENIDE, AND LEAD TELLURIDE:

SUPPLEMENT.

AD- 634 392

*ELECTROMAGNETIC RADIATION

ANISOTROPY
STUDY OF MICROWAVE GENERATION BY MEANS OF INTERACTION WITH ANISOTROPIC MEDIA.
AD- 818 789

*ELECTRON BEAMS

Preparation of Variable Thickness Microbridges Using Electron Beam Lithography and Ion Etching.
AD-A043 668

Electron Resists.

AD-A044 282
IC Fabrication Using Electron-Beam Technology.
AD-A061 460

IC Fabrication Using Electron-Beam Technology.

AD-A061 721
IC Fabrication Using Electron-Beam Technology.
AD-A064 770

IC Fabrication Using Electron-Beam Technology.

AD-A068 656
IC Fabrication Using Electron-Beam Technology.
AD-A082 237

MEMORY DEVICES

HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 802 516

*ELECTRON IRRADIATION

CRYSTALS
EFFECT OF KILOVOLT ELECTRONS ON THE ETCH RATE OF Al2O3 AND Ta2O5.
AD- 696 861

*ELECTRON MICROSCOPES

Replica Techniques for Transmission Electron Microscopy.
AD-A021 891

*ELECTRON MICROSCOPY

Replica Techniques for Transmission Electron Microscopy.
AD-A021 891

CARBIDES

Transmission Microscopy of Ion-Bombardment Thinned Boron Carbide.
AD- 715 857

CARBON FIBERS

Carbon Fiber Microstructure.
AD- 740 315

ETCHED CRYSTALS

DIRECT SOLUTION OF COMPLEX CRYSTAL STRUCTURES BY ELECTRON MICROSCOPY.
AD- 713 554

FIELD EMISSION

HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 802 516

*ELECTRON SPECTROSCOPY

Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium.
AD-A013 949

*ELECTRON TRANSFER

Replica Techniques for Transmission Electron Microscopy.
AD-A021 891

*ELECTRON TUBE PARTS

VAPOR PLATING
CHEMICAL VAPOR DEPOSITED MATERIALS FOR ELECTRON TUBES.
AD- 672 095

*ELECTRON TUBE TARGETS

SEMICONDUCTOR DIODES
Silicone Diode Target Tube Development.
AD- 912 287

*ELECTRONIC SWITCHES

TRANSISTORS
PRODUCTION ENGINEERING MEASURE FOR SILICON NPN SWITCHING

SUBJECT INDEX-6
UNCLASSIFIED ZOM08

ELE-ELE

UNCLASSIFIED

TRANSISTORS.
AD- 637 114

*ELECTROPLATING
Automated Chromium Plating Line
for Gun Barrels.
AD-A079 528

TITANIUM ALLOYS
Pretreatment of Titanium for
Subsequent Electrodeposition of
Metal.
AD- 748 525

*EPITAXIAL GROWTH
Growth Characteristics of GaAs-
Ga(1-x)Al(x)As Structures
Fabricated by Liquid-Phase Epitaxy
Over Preferentially Etched
Channels.
AD-A026 425

Light Emitting Diodes for Fiber
Optic Communications.
AD-A043 727

Electronic Materials Technology
(Semiconductors).
AD-A060 363

Enhanced Heteroepitaxy.
AD-A075 514

Research on Microwave Junction
Gate Field Effect Transistors.
AD-A080 031

*ETCHED CRYSTALS
Chemically Polished Quartz.
AD-A048 077

CADMIUM SELENIDES
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

CRYSTAL DEFECTS
ON THE SLOPE OF ETCH PITS.
AD- 665 280

ELECTRON MICROSCOPY
DIRECT SOLUTION OF COMPLEX
CRYSTAL STRUCTURES BY ELECTRON
MICROSCOPY.
AD- 713 554

INDIUM COMPOUNDS
ETCHING BEHAVIOR OF IN2O3 GROWN
FROM PbO-82O3.
AD- 668 449

LITHIUM FLUORIDES
A STUDY OF LITHIUM FLUORIDE ETCH
MORPHOLOGIES USING SILICA GEL.
AD- 660 381

*ETCHING
Thermal Etching of Beta Ti-V
Alloys.
AD- 772 045

Dislocation Etch Pitting in High-
Purity Niobium.
AD- 772 617

A Study of the Etching
Characteristics of Semiconductor
Materials in RF Plasmas.
AD- 781 831

Ion-Beam Etching of Surface
Gratings.
AD-A000 502

Ion Etching of Amorphous and
Semicrystalline Fibers.
AD-A004 659

Optical Waveguides Fabricated by
Preferential Etching.
AD-A013 153

Anodic Etching - A Method of
Detecting Grinding Burns on
Chromium Plated Steel Parts.
AD-A017 689

A Chromate-Free Process for
Preparing Aluminum Substrates for
Adhesive Bonding -- A Preliminary
Study.
AD-A029 196

Ion Beam Etching.
AD-A041 620

Light Emitting Diodes for Fiber
Optic Communications.
AD-A043 727

Electron Resists.
AD-A044 282

High-Reliability, Low-Cost
Integrated Circuits.
AD-A049 763

Vapor-Phase Etching and
Polishing of GaAs Using Arsenic
Trichloride.
AD-A051 568

Line-Profile Resist Development
Simulation Techniques.
AD-A052 932

IC Fabrication Using Electron-
Beam Technology.
AD-A061 721

Evaluation of Non-Chromated Etch
for Aluminum Alloys (P-Etch).
AD-A064 373

Preferential Chemical Etching
of Blazed Gratings in (110)-
Oriented GaAs.
AD-A074 282

The Nature of the White-etching
Surface Layers Produced During
Reaming Ultra-high Strength Steel.
AD-A076 864

Failure Mechanisms and
Interphase Chemistry of Gold Films
on Ti6Al4V. Part I. Surface
Chemistry of Failure Surfaces.
AD-A081 727

Failure Mechanisms and
Interphase Chemistry of Gold Films
on Ti6Al4V. Part II. Etching of
Ti6Al4V and its Effect on
Evaporated Gold and Commercial
Adhesive Adhesion.
AD-A081 728

Etching Studies on Singly and
Doubly Rotated Quartz Plates.
AD-A081 729

A Double-Etching Technique for
Microstructural Analysis of Steel.
AD-A082 873

ACOUSTIC FILTERS
Ion Beam Etching of Reflective
Array Filters.
AD- 758 934

ALUMINA
EFFECT OF KILOVOLT ELECTRONS ON
THE ETCH RATE OF Al2O3 AND Ta2O5.
AD- 696 861

BRASS
Measurement of Deformation in
Alpha Brass by Means of an

SUBJECT INDEX-7
UNCLASSIFIED ZOM08

ELE-ETC

UNCLASSIFIED

Electrolytic Thiosulfate Etch,
AD- 742 198

CARBIDES

CHEMICAL TINTING OF HAFNIUM AND
ZIRCONIUM CARBIDES FOR
METALLOGRAPHIC EXAMINATION,
AD- 671 925

Transmission Microscopy of Ion-
Bombardment Thinned Boron Carbide.
AD- 715 857

COPPER COMPOUNDS

ETCHING AND REGROWTH OF CUPROUS
CHLORIDE,
AD- 674 757

CRYSTALS

POLISHES AND ETCHES FOR TIN
TELLURIDE, LEAD SULFIDE, LEAD
SELENIDE, AND LEAD TELLURIDE:
SUPPLEMENT.
AD- 634 392

DOSIMETERS

RANGE AND DEPTH DOSE
DISTRIBUTION OF LOW ENERGY CHARGED
PARTICLES IN DOSIMETRY GLASSES,
AD- 642 794

ELECTRON MICROSCOPY

AN ELECTRON-MICROSCOPICAL
EXAMINATION OF GRAYSON'S MICRO-
RULINGS,
AD- 699 991

GALLIUM ARSENIDES

ANODIC BEHAVIOR OF GAAS SINGLE
CRYSTALS AT INCREASED CURRENT
DENSITIES IN ALKALINE AND ACIDIC
SOLUTIONS.
AD- 652 300

INDIUM COMPOUNDS

Certain Chemical Properties of
Indium Phosphide,
AD- 738 682

OXIDES

EFFECT ON ETCH RATE OF OXIDE
SURFACES AFTER ELECTRON

BOMBARDMENT.
AD- 833 329

PHOTOCHEMICAL REACTIONS
PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 635 143

SEMICONDUCTORS

CHEMICAL BEHAVIOUR OF
SEMICONDUCTORS: ETCHING
CHARACTERISTICS,
AD- 633 185

SILICON

THE GROWTH AND ETCHING OF SI
THROUGH WINDOWS IN SiO₂,
AD- 658 248

THE CHLORINE ETCHING OF SINGLE
CRYSTAL SILICON,
AD- 681 798

INFLUENCE OF ACTIVE GASES ON THE
ELECTROPHYSICAL PROPERTIES OF THE
SURFACE OF SILICON,
AD- 684 014

A Study of RF Sputter Etching in
an Argon Plasma Using Silicon as a
Target.
AD- 742 436

SODIUM CHLORIDE

ELECTRONIC AND IONIC PROCESSES
IN SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES),
AD- 675 421

STAINLESS STEEL

ON THE USE OF COLOUR ETCHING
TECHNIQUES FOR STAINLESS STEELS
(ueber die Anwendung von
Farbaetzungen bei Rostfreien
Staehlen),
AD- 699 723

TITANIUM ALLOYS

Effect of Alloying Components on
the Hydrogen Absorption of Titanium
Alloys during Etching.
AD- 768 058

*EXPLOSIVE GASES

Gas Washing of Fracture Surfaces
by Explosive Detonation Products.
AD-AU44 951

*FABRICATION

Advanced Technology for
Micropower Integrated Circuits.
AD-A005 629

High-Reliability, Low-Cost
Integrated Circuits.
AD-A045 089

IC Fabrication Using Electron-
Beam Technology.
AD-A061 460

Semi-Additive Processes for
Fabrication of Printed Wiring
Boards.
AD-A075 975

*FAILURE(MECHANICS)

Failure Mechanisms and
Interphase Chemistry of Gold Films
on Ti6Al4V. Part I. Surface
Chemistry of Failure Surfaces.
AD-A081 727

*FAST NEUTRONS

Radiography with the Fission
Neutrons from Californium-252.
AD-A045 362

*FATIGUE(MECHANICS)

Chemical Durability Improvement
and Static Fatigue of Glasses.
AD-A066 978

*FERRITES

CRYSTAL STRUCTURE
DIRECT SOLUTION OF COMPLEX
CRYSTAL STRUCTURES BY ELECTRON
MICROSCOPY,
AD- 713 554

MORPHOLOGY(BIOLOGY)

MORPHOLOGICAL FEATURES OF
HEXAGONAL FERRITES,
AD- 653 335

*FIBER OPTICS

Light Emitting Diodes for Fiber
Optic Communications.

SUBJECT INDEX-8
UNCLASSIFIED ZOMOB

EXP-FIB

UNCLASSIFIED

AD-A068 348
Light Emitting Diodes for Fiber
Optic Communications.
AD-A071 158

*FIBERS
Ion Etching of Amorphous and
Semicrystalline Fibers.
AD-A004 659
Oxidative Stabilization of
Acrylic Fibers. I. Oxygen Uptake
and General Model.
AD-A055 071

BORON
RESEARCH ON RESIN-IMPREGNATED,
COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

*FIELD EFFECT TRANSISTORS
V Groove M.O.S. Transistor
Technology.
AD- 773 296
Gallium Arsenide Vertical
Channel Insulated Gate Field-Effect
Transistor.
AD-A047 108
Indium Phosphide for High
Frequency Power Transistors.
AD-A079 812
Research on Microwave Junction
Gate Field Effect Transistors.
AD-A080 031
The Implantation of Impurity
Ions and Proton Bombardment in
Indium Phosphide.
AD-A080 144

*FIELD EMISSION
CADMIUM SULFIDES
FIELD EMISSION FROM CADMIUM
SULPHIDE.
AD- 646 957

*FILLING
Optical Waveguides Fabricated by
Preferential Etching.
AD-A013 153

*FILMS
Enhanced Heteroepitaxy.
AD-A075 514

CHROMIUM
CHROMIUM MASKS FOR
MICROCIRCUITRY.
AD- 634 762

RESISTORS
HIGH PERFORMANCE THIN FILMS FOR
MICROCIRCUITS.
AD- 662 748

*FIXED CAPACITORS
FILMS
High Capacitance Thin Film
Structures.
AD- 863 068

*FLUERIC DEVICES
A Study of Fineblanking for the
Manufacture of Fluoric Laminar
Proportional Amplifiers.
AD-A040 230

*FLUID AMPLIFIERS
A Study of Fineblanking for the
Manufacture of Flueric Laminar
Proportional Amplifiers.
AD-A040 230

ETCHING
QUARTERLY BULLETIN OF THE
DIVISION OF MECHANICAL ENGINEERING
AND THE NATIONAL AERONAUTICAL
ESTABLISHMENT.
AD- 689 274

*FLUID FILTERS
PATENTS
A METHOD OF MAKING MESH FILTERS
FROM MATERIALS AND ALLOYS.
AD- 635 828

*FLUIDIC AMPLIFIERS
Study of the Switching Mechanism
in Bistable Amplifiers with
Application to Their Development,
Optimization and Construction.
AD-A036 266

*FRACTURE(MECHANICS)
Fracture Strength of Soda-Lime
Glass after Etching.
AD- 783 086

Adhesive Joints.
Fracturing Characteristics of
AD-A075 541

*FRAGMENTS
Gas Washing of Fracture Surfaces
by Explosive Detonation Products.
AD-A044 951

*FRESNEL LENSES
Fresnel Lens and Beam Control in
Optical Waveguide.
AD-A080 106

*FUEL CELLS
CATALYSTS
ON THE ACTIVITY OF PLATINUM
CATALYSTS IN SOLUTION. PART I.
EFFECTS OF THERMAL TREATMENT AND
CHEMICAL ETCHING ON THE PT-
O/HYDROGEN SPECIFIC REACTION RATE.
AD- 664 490

*FURNACES
CONTAMINATION
QUARTERLY BULLETIN OF THE
DIVISION OF MECHANICAL ENGINEERING
AND THE NATIONAL AERONAUTICAL
ESTABLISHMENT.
AD- 689 274

*FUZE FUNCTIONING ELEMENTS
Tantalum Nitride Thin-Film
Ratiometer for Electronic Timer as
XM732 Proximity Fuze.
AD-A020 670

*GALLIUM ALLOYS
EPITAXIAL GROWTH
DEVELOPMENT OF GALLIUM ARSENIDE-
PHOSPHIDE GRADED BAND-GAP BASE
TRANSISTOR STRUCTURES.
AD- 467 531

*GALLIUM ARSENIDES
Profile and Groove-Depth Control
in GaAs Diffraction Gratings

SUBJECT INDEX-9
UNCLASSIFIED ZOM08

FIB-GAL

UNCLASSIFIED

Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System, AD-A026 428

Gallium Arsenide Vertical Channel Insulated Gate Field-Effect Transistor. AD-A047 108

Vapor-Phase Etching and Polishing of GaAs Using Arsenic Trichloride. AD-A051 568

Preferential Chemical Etching of Blazed Gratings in (110)-Oriented GaAs. AD-A074 282

Sputter Damage in GaAs Exposed to Low Energy Argon Ions. AD-A080 119

The Implantation of Impurity Ions and Proton Bombardment in Indium Phosphide. AD-A080 144

ELECTROLYSIS

ANODIC BEHAVIOR OF GaAs SINGLE CRYSTALS AT INCREASED CURRENT DENSITIES IN ALKALINE AND ACIDIC SOLUTIONS. AD- 652 300

*GATES(CIRCUITS)

Research on Microwave Junction Gate Field Effect Transistors. AD-A080 031

*GEARS

Alternate Production Processes for Fuse Pinions. AD- 777 000

*GERMANIUM

Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium. AD-A013 949

INTEGRATED CIRCUITS

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 801 736

SPARK MACHINING

SPARK EROSION CUTTING OF GERMANIUM. AD- 708 756

*GLASS

The Work of the State Institute of Glass in the Area of Glass Hardening. AD-A014 053

Chemical Durability Improvement and Static Fatigue of Glasses. AD-A066 978

CRACKS

ENVIRONMENTALLY ASSISTED CRACK GROWTH IN GLASS. AD- 663 885

The Rate of Dissolution of Amorphous Silica in Water. Inaccessibility of Crack Ties in Glass. AD- 762 767

ETCHING

AN ELECTRON-MICROSCOPICAL EXAMINATION OF GRAYSON'S MICRO-RULINGS. AD- 699 991

MATERIALS

FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION. AD- 464 486

*GLASS TEXTILES

SURFACE PROPERTIES MECHANISMS OF ATTACK ON GLASSES IN AQUEOUS MEDIA. AD- 641 500

*GOLD ALLOYS

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part I. Surface Chemistry of Failure Surfaces. AD-A081 727

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part II. Etching of

Ti6Al4V and its Effect on Evaporated Gold and Commercial Adhesive Adhesion. AD-A081 728

*GRAIN BOUNDARIES

ETCHING

Observations on Grain Boundary Etching Behavior and its Relation to Nonequilibrium Boundary Solute Enrichment. AD- 720 013

*GRATINGS(SPECTRA)

Ion-Beam Etching of Surface Gratings. AD-A000 502

Grating Masks Suitable for Ion-Beam Machining and Chemical Etching. AD-A005 095

*GROOVING

Optical Waveguides Fabricated by Preferential Etching. AD-A013 153

*GUN BARRELS

Automated Chromium Plating Line for Gun Barrels. AD-A079 528

*HAFNIUM COMPOUNDS

ETCHING

CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES FOR METALLOGRAPHIC EXAMINATION. AD- 671 925

*HARDENING

The Work of the State Institute of Glass in the Area of Glass Hardening. AD-A014 053

*HEAT RESISTANT ALLOYS

CHEMICAL MILLING CHEMICAL MILLING HIGH-TEMPERATURE ALLOYS AND STEELS. AD- 829 039

SUBJECT INDEX-10

UNCLASSIFIED ZOM08

GAT-HEA

UNCLASSIFIED

<p>•HIGH FREQUENCY Indium Phosphide for High Frequency Power Transistors. AD-A079 812</p>	<p>AD- 738 682</p>	<p>AD-A054 670</p>
<p>•HIGH TEMPERATURE High Temperature Microscopy of Porcelain-Precious Alloys. AD-A039 647</p>	<p>•INDIUM PHOSPHIDES Indium Phosphide for High Frequency Power Transistors. AD-A079 812 The Implantation of Impurity Ions and Proton Bombardment in Indium Phosphide. AD-A080 144</p>	<p>•INSULATION Semiconductor-Insulator Structures for the 1- to 2- Micrometers Region. AD-A022 970</p>
<p>•HOLES(OPENINGS) The Nature of the White-etching Surface Layers Produced During Reaming Ultra-high Strength Steel. AD-A076 864</p>	<p>•INERTIAL NAVIGATION INSTRUMENTATION Advanced Inertial Technologies. Volume I. AD- 911 088</p>	<p>•INTEGRATED CIRCUITS V Groove M.O.S. Transistor Technology. AD- 773 296 Advanced Technology for Micropower Integrated Circuits. AD-A005 629 Advanced Integrated-Circuit Technology for Micropower ICs. (Integrated Circuits). AD-A025 507 Electron Resists. AD-A044 282 High-Reliability, Low-Cost Integrated Circuits. AD-A045 089 High-Reliability, Low-Cost Integrated Circuits. AD-A049 763 IC Fabrication Using Electron- Beam Technology. AD-A061 460 IC Fabrication Using Electron- Beam Technology. AD-A061 721 IC Fabrication Using Electron- Beam Technology. AD-A064 770 IC Fabrication Using Electron- Beam Technology. AD-A068 656 IC Fabrication Using Electron- Beam Technology. AD-A082 237</p>
<p>•HYDROGEN TITANIUM ALLOYS Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching. AD- 768 058</p>	<p>•INFRARED DETECTORS Properties of Infrared Cat- Whisker near 10.6 Microns. AD-A015 492</p>	<p>FIXED CAPACITORS High Capacitance Thin Film Structures. AD- 863 068</p>
<p>•IMAGE INTENSIFIERS(ELECTRONICS) INFRARED IMAGES Pyroelectric/Integrated Circuit Infrared Imaging Array Development. AD- 912 475</p>	<p>PASSIVE SYSTEMS Pyroelectric/Integrated Circuit Infrared Imaging Array Development. AD- 912 475</p>	<p>GERMANIUM INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.</p>
<p>•IMPATT DIODES Manufacturing Methods and Technology Engineering High- Efficiency, High-Power Gallium Arsenide Read-Type IMPATT Diodes. Volume I. AD-A048 578</p>	<p>•INFRARED IMAGE TUBES INTEGRATED CIRCUITS Pyroelectric/Integrated Circuit Infrared Imaging Array Development. AD- 912 475</p>	
<p>•IMPURITIES Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A030 777</p>	<p>•INFRARED LASERS Diffraction Grating Development. AD-A008 199 The Effects of Surface Structural Properties on Laser- Induced Damage at 1.06 Micrometers. AD-A019 325</p>	
<p>•INDIUM COMPOUNDS ETCHED CRYSTALS ETCHING BEHAVIOR OF IN2O3 GROWN FROM PBO-8203, AD- 668 449</p>	<p>•INFRARED WINDOWS Investigation of Advanced Protective and Antireflection Coatings for Halide Optics. AD-A003 631</p>	
<p>ETCHING Certain Chemical Properties of Indium Phosphide,</p>	<p>•INJECTION LASERS III-V Heterojunction Structures for Long-Wavelength Injection Laser.</p>	

SUBJECT INDEX-11
UNCLASSIFIED ZOM08

HIG-INT

AD- 801 736

LOGIC CIRCUITS
INTEGRATED LOGIC NETWORKS.
AD- 680 411

MANUFACTURING

HETEROCRYSTAL INTEGRATED CIRCUIT
TECHNIQUES.

AD- 661 042

EFFECT ON ETCH RATE OF OXIDE
SURFACES AFTER ELECTRON
BOMBARDMENT.

AD- 833 329

Sputtering Technology for
Improved Electron Devices.

AD-8002 612

PACKAGING

AN ECONOMICAL FLAT PACKAGE FOR
INTEGRATED CIRCUITS.

AD- 450 549

PHOTOENGRAVING

CHROMIUM MASKS FOR
MICROCIRCUITRY.

AD- 634 762

PREPARATION

PHOTOMETALLIC PROCESS
INVESTIGATION.

AD- 635 143

PROCESSING

CONTINUOUS PROCESSES FOR
FUNCTIONAL ELECTRONIC BLOCKS.

AD- 476 409

DEVELOPMENT OF A
MICROELECTRONICS CAPABILITY AND
FACILITY AT RADC.

AD- 484 781

RADAR EQUIPMENT

INTEGRATED CIRCUITS FOR PORTABLE
RADAR EQUIPMENT.

AD- 645 047

INTEGRATED CIRCUITS FOR PORTABLE
RADAR EQUIPMENT.

AD- 653 628

*INTERMETALLIC COMPOUNDS

CRYSTAL GROWTH

THE PREPARATION OF ORIENTED
SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE
RARE EARTH AND IRON GROUP METALS.
AD- 637 803

*ION BEAMS

Ion Beam Superpolishing of Metal
Mirrors for High Energy Lasers.

AD-A031 106

Preparation of Variable
Thickness Microbridges Using
Electron Beam Lithography and Ion
Etching.

AD-A043 668

Broad Beam Ion Source Operation
with Four Common Gases.

AD-A077 561

*ION BOMBARDMENT

Ion Etching of Amorphous and
Semicrystalline Fibers.

AD-A004 659

*ION IMPLANTATION

The Implantation of Impurity
Ions and Proton Bombardment in
Indium phosphide.

AD-A080 144

*ION SOURCES

Broad Beam Ion Source Operation
with Four Common Gases.

AD-A077 561

*IONIZATION TRAILS

POLYESTER PLASTICS
CHARGED PARTICLE TRACKS IN
POLYMERS NO. 7: SENSITIVITY
ENHANCEMENT OF LEXAN,
AD- 682 922

*IRON ALLOYS

MECHANICAL PROPERTIES
PLASTIC FLOW IN THE LOCALE ON
NOTCHES AND CRACKS IN Fe-35i STEEL
UNDER CONDITIONS APPROACHING PLANE
STRAIN.

AD- 680 123

*LAMINATED PLASTICS

MECHANICAL PROPERTIES
MECHANICAL BEHAVIOR OF BERYLLIUM
WIRE REINFORCED PLASTIC COMPOSITES.
PART II. TIME DEPENDENT MECHANICAL
PROPERTIES.

AD- 674 591

*LASER BEAMS

Diffraction Grating Development.
AD-A008 199

*LASER CAVITIES

Thin-Film Dye Laser with Etched
Cavity.

AD-A033 803

*LASER MODULATORS

Theoretical Study and
Experimental Development of Thin-
Film Lasers and Modulators for use
in Integrated Optics.
AD-A004 138

*LASERS

Ion Beam Superpolishing of Metal
Mirrors for High Energy Lasers.
AD-A031 106

SEMICONDUCTOR DEVICES

LONG-WAVELENGTH INFRARED Pb(1-
X)Sn(X)Te DIODE LASERS.

AD- 673 601

*LEAD COMPOUNDS

Metal-Insulator-Semiconductor
Studies of Lead Telluride.
AD-A038 996

*LENSES

DAMAGE
ELIMINATION OF DAMAGE TO
METALLOGRAPH OBJECTIVE LENSES BY
ETCHANTS CONTAINING HYDROFLUORIC
ACID.

AD- 664 554

*LIGHT EMITTING DIODES

Light Emitting Diodes for Fiber
Optic Communications.
AD-A043 727

SUBJECT INDEX-12
UNCLASSIFIED 20M08

INT-LIG

UNCLASSIFIED

Light Emitting Diodes for Fiber Optic Communications.
AD-A068 348

Light Emitting Diodes for Fiber Optic Communications.
AD-A071 158

*LINES(GEOMETRY)
Line-Profile Resist Development Simulation Techniques,
AD-A052 932

*LITHIUM FLUORIDES
DAMAGE
EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS,
AD- 694 802

ETCHED CRYSTALS
A STUDY OF LITHIUM FLUORIDE ETCH MORPHOLOGIES USING SILICA GEL.
AD- 660 381

*LITHOGRAPHY
Modeling Validation, Techniques and Applications for X-Ray Lithography.
AD-A042 019

*LOGIC CIRCUITS
INTEGRATED CIRCUITS
INTEGRATED LOGIC NETWORKS.
AD- 680 411

*MANUFACTURING
TRANSISTORS
INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.
AD- 801 736

*MARTENSITE
MICROSTRUCTURE
REPLICATION OF FINE STRUCTURE IN MARTENSITE,
AD- 644 652

*MASKING
X RAY DIFFRACTION
Fabrication Procedure for Silicon Membrane X-Ray Lithography

Masks.
AD- 769 857

*MASKS
Grating Masks Suitable for Ion-Beam Machining and Chemical Etching.
AD-A005 095
Electron Resists.
AD-A044 282

*MEASURING INSTRUMENTS
Design and Fabrication of a Thin-Film Radiometer for Electronic Timer of XM732 Proximity Fuze.
AD-A005 615

*MEMORY DEVICES
IC Fabrication Using Electron-Beam Technology.
AD-A061 460

ELECTRON BEAMS
HIGH- INFORMATION-DENSITY STORAGE SURFACES.
AD- 802 516

*METAL COATINGS
ELECTRODEPOSITION
Plasma Babbitt Surfacing of the Steel Base of Bearings,
AD- 750 517

*METAL CRYSTALS
CRYSTAL STRUCTURE
RESEARCH IN THE GENERAL FIELD OF SUBSTRUCTURE AND DISLOCATION NETWORKS IN METALLIC CRYSTALS.
AD- 610 434

*METAL FILMS
Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium.
AD-A013 949
Reliability Study of Doped Aluminum Conductor Films.
AD-A050 677

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part I. Surface

Chemistry of Failure Surfaces.
AD-A081 727

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part II. Etching of Ti6Al4V and its Effect on Evaporated Gold and Commercial Adhesive Adhesion.
AD-A081 728

MOLYBDENUM
GASEOUS PRECISION ETCHING OF MOLYBDENUM.
AD- 645 201

PHOTOENGRAVING
DURABLE CHROMIUM MASKS FOR PHOTORESIST APPLICATIONS.
AD- 647 160

*METAL METAL BONDS
A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.
AD-A065 360

*METALLOGRAPHY
Replica Techniques for Transmission Electron Microscopy.
AD-A021 891

CHEMICAL MILLING
PRINCIPLES OF METALLOGRAPHIC ETCHING.
AD- 616 786

CORROSION RESISTANT ALLOYS
APPLICATION OF THE POTENTIAL POLARIZATION IN THE STUDY AND IN THE METALLOGRAPHY OF CORROSION RESISTANT STEELS,
AD- 841 860

MARTENSITE
REPLICATION OF FINE STRUCTURE IN MARTENSITE,
AD- 644 652

ORDNANCE STEEL
METALLOGRAPHIC METHODS ETCHING FOR BAINITIC FINE CARBIDES. A

SUBJECT INDEX-13
UNCLASSIFIED ZOM08

LIN-MET

UNCLASSIFIED

METALLOGRAPHIC METHOD FOR REVEALING THE FINE CARBIDES IN BAINITE FORMED DURING CONTINUOUS COOLING IN A NICKEL-CHROMIUM-MOLYBDENUM COMPOSITION.
AD- 629 644

*MICROCIRCUITS

A Study of the Etching Characteristics of Semiconductor Materials in RF Plasmas.
AD- 781 831
Preparation of Variable Thickness Microbridges Using Electron Beam Lithography and Ion Etching.
AD-A043 668

*MICROELECTRONICS

CIRCUIT INTERCONNECTIONS
MICROMINIATURE MONOLITHIC CROSSPOINT INTERCONNECTIONS.
AD- 664 126

CIRCUITS

HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS.
AD- 662 748
PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 809 337

DATA STORAGE SYSTEMS

HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 668 242
HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 673 143

FEASIBILITY STUDIES

HIGH-INFORMATION-DENSITY STORAGE SURFACES.
AD- 802 516

*MICROSCOPES LENSES

ELIMINATION OF DAMAGE TO METALLOGRAPH OBJECTIVE LENSES BY ETCHANTS CONTAINING HYDROFLUORIC ACID.

AD- 664 554

*MICROSTRUCTURE

High Temperature Microscopy of Porcelain-Precious Alloys.
AD-A039 647
A Double-Etching Technique for Microstructural Analysis of Steel.
AD-A082 873

*MICROWAVE EQUIPMENT

Manufacturing Methods and Technology Engineering High-Efficiency, High-Power Gallium Arsenide Read-Type IMPATT Diodes. Volume I.
AD-A048 578

*MICROWAVE OSCILLATORS

Production Engineering Measure for Low Noise Solid-State Oscillator.
AD-A009 776
Hyperabrupt Varactor Voltage-Controlled Oscillators.
AD-A047 522

Manufacturing Methods and

Technology Engineering High-Efficiency, High-Power Gallium Arsenide Read-Type IMPATT Diodes. Volume I.
AD-A048 578

*MINIATURIZATION(ELECTRONICS)

MANUFACTURING
PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 631 330

*MIRRORS

Ion Beam Superpolishing of Metal Mirrors for High Energy Lasers.
AD-A031 106

*MODULES(ELECTRONICS) MANUFACTURING

Manufacturing Methods and Technology Study Covering Methods for Manufacturing Electronic Modules. Manufacturing Methods for Electronic Modules.

AD- 758 855

*MOLYBDENUM

DISLOCATIONS
A STUDY OF DISLOCATION STRUCTURE OF SUBBOUNDARIES IN MOLYBDENUM SINGLE CRYSTALS.
AD- 675 563

ETCHING

ETCH-PITTING CHARACTERISTICS OF HIGH-PURITY MOLYBDENUM.
AD- 633 601
GASEOUS PRECISION ETCHING OF MOLYBDENUM.
AD- 645 201

*MOLYBDENUM COMPOUNDS

CARBIDES
INVESTIGATION OF SINGLE-CRYSTAL DIMOLYBDENUM CARBIDE.
AD- 803 613

*MONITORS

CRACK PROPAGATION
An Experimental Technique for Monitoring Dynamic Cracks.
AD- 754 762

*MONOLITHIC STRUCTURES(ELECTRONICS)

Monolithic 20W 2GHz Transistor and Monolithic 5W 4GHz Transistor.
AD-A068 165

*MORPHOLOGY(BIOLOGY)

FERRITES
MORPHOLOGICAL FEATURES OF HEXAGONAL FERRITES.
AD- 653 335

*NEUTRON DETECTORS

DESIGN
A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS.
AD- 643 540

*NEUTRON FLUX

MEASUREMENT
A STANDARDIZED METHOD FOR MAKING

SUBJECT INDEX-14

UNCLASSIFIED ZOM08

MIC-NEU

UNCLASSIFIED

NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS.
AD- 643 540

*NIOBIUM
Dislocation Etch Pitting in High-Purity Niobium.
AD- 772 617

DISLOCATIONS
Dislocation Velocity Measurements in High Purity Niobium.
AD- 769 129

*NITROCELLULOSE
PARTICLE TRAJECTORIES
A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE.
AD- 666 543

*NONDESTRUCTIVE TESTING
Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures.
AD- 775 466
Anodic Etching - A Method of Detecting Grinding Burns on Chromium Plated Steel Parts.
AD-A017 689

*OPTICAL COMMUNICATIONS
Light Emitting Diodes for Fiber Optic Communications.
AD-A068 348
Light Emitting Diodes for Fiber Optic Communications.
AD-A071 158

*OPTICAL GLASS
MECHANICAL PROPERTIES
METHOD FOR INCREASING THE MECHANICAL STRENGTH OF GLASS.
AD- 694 636

*OPTICAL LENSES
A Geodesic Optical Waveguide Lens Fabricated by Anisotropic Etching.
AD-A078 202

*OPTICAL WAVEGUIDES
Theoretical Study and Experimental Development of Thin-Film Lasers and Modulators for Use in Integrated Optics.
AD-A004 138

Optical Waveguides Fabricated by Preferential Etching.
AD-A013 153

Growth Characteristics of GaAs-Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels.
AD-A026 425

A Geodesic Optical Waveguide Lens Fabricated by Anisotropic Etching.
AD-A078 202

Fresnel Lens and Beam Control in Optical Waveguide.
AD-A080 106

*ORAL HEALTH
Criteria for Successful Composite Restorations.
AD-A071 064

*ORDNANCE STEEL
METALLOGRAPHY
METALLOGRAPHIC METHODS ETCHING FOR BAINITIC FINE CARBIDES. A METALLOGRAPHIC METHOD FOR REVEALING THE FINE CARBIDES IN BAINITE FORMED DURING CONTINUOUS COOLING IN A NICKEL-CHROMIUM-MOLYBDENUM COMPOSITION.
AD- 629 644

*OXIDATION
Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium.
AD-A013 949

*OXIDATION RESISTANCE
Oxidative Stabilization of Acrylic Fibers. I. Oxygen Uptake and General Model.
AD-A055 071

*OXIDES
ELECTRON IRRADIATION EFFECT ON ETCH RATE OF OXIDE SURFACES AFTER ELECTRON BOMBARDMENT.
AD- 833 329

*PACKAGING
INTEGRATED CIRCUITS
AN ECONOMICAL FLAT PACKAGE FOR INTEGRATED CIRCUITS.
AD- 450 549

*PARTICLE TRAJECTORIES
NITROCELLULOSE
A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE.
AD- 666 543

*PHOSPHIDES
ETCHING
Certain Chemical Properties of Indium Phosphide.
AD- 738 682

SEMICONDUCTING FILMS
INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS.
AD- 684 965

*PHOSPHORIC ACIDS
Anodize Optimization and Adhesive Evaluations for Repair Applications.
AD-A061 758

*PHOTOCHEMICAL REACTIONS
DECOMPOSITION
PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 809 337

ETCHING
PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 635 143

*PHOTOCONDUCTIVITY
SILICON
INFLUENCE OF ACTIVE GASES ON THE

SUBJECT INDEX-15
UNCLASSIFIED ZOM08

NIO-PHO

UNCLASSIFIED

ELECTROPHYSICAL PROPERTIES OF THE
SURFACE OF SILICON.

AD- 684 014

*PHOTOENGRAVING
INTEGRATED CIRCUITS
PHOTOMETALLIC PROCESS
INVESTIGATION.

AD- 635 143

METAL FILMS
DURABLE CHROMIUM MASKS FOR
PHOTORESIST APPLICATIONS.

AD- 647 160

*PHOTOGRAPHIC DEVELOPERS
Linearity and Enhanced
Sensitivity of the Shipley AZ-1350B
Photorealist.

AD-A045 389

*PHOTOLITHOGRAPHY
Linearity and Enhanced
Sensitivity of the Shipley AZ-1350B
Photorealist.

AD-A045 389

*PHOTOVOLTAIC EFFECT
Non-reflecting Vertical Junction
Silicon Solar Cell Optimization.

AD-A064 431

*PLASTIC COATINGS
ELECTRODES

Chronic Oxygen Electrodes - A
Feasibility Study.

AD- 748 422

*PLASTIC DEFORMATION
The Nature of the White-etching
Surface Layers Produced During
Reaming Ultra-high Strength Steel.

AD-A076 864

*PLATES
Etching Studies on Singly and
Doubly Rotated Quartz Plates.

AD-A081 729

*PLATINUM
CATALYSTS

ON THE ACTIVITY OF PLATINUM
CATALYSTS IN SOLUTION. PART I.
EFFECTS OF THERMAL TREATMENT AND
CHEMICAL ETCHING ON THE PT-
O/HYDROGEN SPECIFIC REACTION RATE.

AD- 684 490

*POLISHING
Etching Studies on Singly and
Doubly Rotated Quartz Plates.

AD-A081 729

*POLYESTER PLASTICS
IONIZATION TRAILS
CHARGED PARTICLE TRACKS IN
POLYMERS NO. 7: SENSITIVITY
ENHANCEMENT OF HEXAN,

AD- 682 922

*POLYMERIC FILMS
Electron Resists.

AD-A044 282

*POLYMERS
Ion Etching of Amorphous and
Semicrystalline Fibers.

AD-A004 659

*POTASSIUM COMPOUNDS
The Growth and Characterization
of Potassium and Rubidium Azide
Single Crystals.

AD-A032 619

*POWER EQUIPMENT
Indium Phosphide for High
Frequency Power Transistors.

AD-A079 812

*PRECIOUS METALS
High Temperature Microscopy of
Porcelain-Precious Alloys.

AD-A039 647

*PRINTED CIRCUIT BOARDS
Semi-Additive Processes for
Fabrication of Printed Wiring
Boards.

AD-A075 975

*PRINTED CIRCUITS

MANUFACTURING
SHORT CUT TO PRINTED CIRCUIT
PROTOTYPES.

AD- 626 616

*PROCESSING
Semi-Additive Processes for
Fabrication of Printed Wiring
Boards.

AD-A075 975

Surface Treatment for Aluminum
Bonding.

AD-A076 950

*PROJECTILE FUZES
Alternate Production Processes
for Fuze Pinions.

AD- 777 000

*PROTON BOMBARDMENT
The Implantation of Impurity
Ions and Proton Bombardment in
Indium Phosphide.

AD-A080 144

*PROXIMITY FUZES
Design and Fabrication of a Thin-
Film Ratiometer for Electronic
Timer of XM732 Proximity Fuze.

AD-A005 615

Tantalum Nitride Thin-Film
Ratiometer for Electronic Timer of
XM732 Proximity Fuze.

AD-A020 670

*PYROELECTRICITY
High Performance Pyroelectric
Materials.

AD-A049 204

*PYROLITIC GRAPHITE
MICROSTRUCTURE
THE METALLOGRAPHY OF PYROLITIC
GRAPHITE.

AD- 613 643

*QUARTZ
Chemically Polished Quartz.

AD-A048 077

Etching Studies on Singly and
Doubly Rotated Quartz Plates.

SUBJECT INDEX-16
UNCLASSIFIED ZOM08

PHO-QUA

UNCLASSIFIED

AD-A081 729	*RADIOGRAPHY Radiography with the Fission Neutrons from Californium-252. AD-A045 362	*RESISTORS FILMS HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS. AD- 662 748
*QUARTZ RESONATORS DEFECTS(MATERIALS) INCREASED RESISTANCE OF CRYSTAL UNITS AT OSCILLATOR NOISE LEVELS, AD- 658 947	*RANDOM ACCESS COMPUTER STORAGE IC Fabrication Using Electron- Beam Technology. AD-A064 770	*RUBIDIUM COMPOUNDS The Growth and Characterization of Potassium and Rubidium Azide Single Crystals, AD-A032 619
MANUFACTURING PRODUCTION ENGINEERING MEASURE FOR TYPE CR-(XM-60)/U CRYSTAL UNITS. AD- 642 425	*RDX DISLOCATIONS DISLOCATION ETCHING OF CYCLOTRIMETHYLENE TRINITRAMINE CRYSTALS, AD- 689 936	*RUBY CRYSTAL DEFECTS CRYSTAL PERFECTION OF ALPHA- AL2O3 AS A FUNCTION OF GROWTH METHOD. AD- 642 040
Mode Control and Related Studies of VHF Quartz Filter Crystals, AD- 736 758	*RECTIFIERS SEMICONDUCTOR DEVICES 300 C SEMICONDUCTOR FOR POWER DEVICES. AD- 815 000	*RUTILE ETCHING Coordination Chemistry and Kinetics of Preferential Etching on Surfaces of TiO2 (Rutile). AD- 759 259
*RADAR EQUIPMENT INTEGRATED CIRCUITS INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 645 047	*REFLECTIVITY Second Surface Thermal Control Mirrors for Reflection Control. Volume I. AD-A034 863	*SAPPHIRE Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A021 905
INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 653 628	*REFLECTORS Surface-Wave Resonators Using Grooved Reflectors. AD-A017 356	Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A030 777
*RADIATION EFFECTS The Effects of Surface Structural Properties on Laser- Induced Damage at 1.06 Micrometers. AD-A019 325	*REINFORCING MATERIALS ADHESION BOND STRENGTH CHARACTERISTICS OF ELECTRODEPOSITED NICKEL ON BORON AND SILICON CARBIDE FILAMENTS (REINFORCED COMPOSITES). AD- 688 863	CRYSTAL DEFECTS CRYSTAL PERFECTION OF ALPHA- AL2O3 AS A FUNCTION OF GROWTH METHOD. AD- 642 040
*RADIATION MEASURING INSTRUMENTS NITROCELLULOSE A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE, AD- 666 543	*RELIABILITY (ELECTRONICS) TRANSISTORS PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND TO INSURE THE RELIABILITY OF THE C600 SERIES FIELD EFFECT TRANSISTORS. AD- 606 477	FRACTURE(MECHANICS) FRACTURE OF SAPPHIRE. AD- 696 910
POLYESTER PLASTICS CHARGED PARTICLE TRACKS IN POLYMERS NO. 7: SENSITIVITY ENHANCEMENT OF LEXAN, AD- 682 922		*SEMICONDUCTING FILMS EPITAXIAL GROWTH INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS. AD- 684 965
*RADIOFREQUENCY MATERIALS STUDY OF MICROWAVE GENERATION BY MEANS OF INTERACTION WITH ANISOTROPIC MEDIA. AD- 818 789		

SUBJECT INDEX-17
UNCLASSIFIED ZOM08

QUA-SEM

UNCLASSIFIED

MANUFACTURING
FABRICATION OF GLASS MASKS, AND
THEIR APPLICATION TO THIN-FILM
CIRCUIT DEPOSITION,
AD- 464 486

SOLAR CELLS
RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454

*SEMICONDUCTOR DEVICES
Techniques for Making Gap-
Coupled Acoustoelectric Devices.
AD-A031 719

LASERS
LONG-WAVELENGTH INFRARED Pb(1-
x)Sn(x)Te DIODE LASERS.
AD- 673 601

MANUFACTURING
Sputtering Technology for
Improved Electron Devices.
AD-B002 612

SILICON
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
AD- 626 985

*SEMICONDUCTOR DIODES
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431

ELECTRON TUBE TARGETS
Silicone Diode Target Tube
Development.
AD- 912 287

MANUFACTURING
RF Sputter Etching of Al, SiO₂,
and Photoresist.
AD- 757 878

*SEMICONDUCTOR JUNCTIONS
Research on Microwave Junction
Gate Field Effect Transistors.
AD-A080 031

*SEMICONDUCTORS

A Study of the Etching
Characteristics of Semiconductor
Materials in RF Plasmas.
AD- 781 831

Investigation of Defects and
Impurities in Silicon-on-Sapphire.
AD-A021 905

Semiconductor-Insulator
Structures for the 1- to 2-
Micrometers Region.
AD-A022 970

Growth Characteristics of GaAs-
Ga(1-x)Al(x)As Structures
Fabricated by Liquid-Phase Epitaxy
Over Preferentially Etched
Channels.
AD-A026 425

Metal-Insulator-Semiconductor
Studies of Lead Telluride.
AD-A038 996

Modal Analysis of SAW Convoiver.
AD-A056 809
Electronic Materials Technology
(Semiconductors).
AD-A060 363

The Implantation of Impurity
Ions and Proton Bombardment in
Indium Phosphide.
AD-A080 144

CHEMICAL PROPERTIES
CHEMICAL BEHAVIOUR OF
SEMICONDUCTORS: ETCHING
CHARACTERISTICS,
AD- 633 185

DAMAGE
Interaction of Semiconductor
Materials with Laser Radiation at
10.6 Micrometers.
AD- 753 918

ELECTROCHEMISTRY
ELECTROCHEMICAL DEMBER EFFECT IN
SEMICONDUCTORS,
AD- 614 180

ELECTROLUMINESCENCE
SEMICONDUCTOR MATERIALS.
AD- 625 676

ETCHING

ILLUMINATION AND THE
PHOTOENGRAVING OF SILICON,
AD- 687 644

Coordination Chemistry and
Kinetics of Preferential Etching on
Surfaces of TiO₂ (Rutile).
AD- 759 259

SILICON CARBIDES
GROWTH, PROCESSING AND
CHARACTERIZATION OF BETA-SILICON
CARBIDE SINGLE CRYSTALS,
AD- 689 099

SURFACE PROPERTIES
METHODS OF SiC SURFACE AND p-n
JUNCTION TREATMENT,
AD- 697 569

*SILICA GEL
ETCHING
A STUDY OF LITHIUM FLUORIDE ETCH
MORPHOLOGIES USING SILICA GEL.
AD- 660 381

*SILICIDES
PHYSICAL PROPERTIES
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
AD- 626 985

*SILICON
Investigation of Defects and
Impurities in Silicon-on-Sapphire,
AD-A021 905
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
AD-A030 777
Electron Resists.
AD-A044 282

The Adsorption of CO on Planar
and Oxygen-Etched Silicon Surfaces,
AD-A060 127
Enhanced Heteroepitaxy.
AD-A075 514

COATINGS
Analysis of Aluminum Oxide Films

SUBJECT INDEX-18
UNCLASSIFIED ZOM08

SEM-SIL

UNCLASSIFIED

on Silicon,
AD- 747 019

CRYSTAL GROWTH
THE GROWTH AND ETCHING OF SI
THROUGH WINDOWS IN SiO₂,
AD- 658 248

DAMAGE
Interaction of Semiconductor
Materials with Laser Radiation at
10.6 Micrometers.
AD- 753 918

DEFECTS(MATERIALS)
Damage Profiles in Silicon and
their Impact on Device Reliability.
AD- 756 250

ETCHING
THE CHLORINE ETCHING OF SINGLE
CRYSTAL SILICON,
AD- 681 798
A Study of RF Sputter Etching in
an Argon Plasma Using Silicon as a
Target.
AD- 742 436

PHASE STUDIES
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
AD- 626 985

PHOTOENGRAVING
ILLUMINATION AND THE
PHOTOENGRAVING OF SILICON,
AD- 687 644

SURFACE PROPERTIES
INFLUENCE OF ACTIVE GASES ON THE
ELECTROPHYSICAL PROPERTIES OF THE
SURFACE OF SILICON.
AD- 684 014

TRANSISTORS
PRODUCTION ENGINEERING MEASURE
FOR SILICON OVERLAY TRANSISTORS.
AD- 619 295
PRODUCTION ENGINEERING MEASURE

FOR SILICON OVERLAY TRANSISTORS.
AD- 635 814

*SILICON CARBIDES
CRYSTAL GROWTH
GROWTH, PROCESSING AND
CHARACTERIZATION OF BETA-SILICON
CARBIDE SINGLE CRYSTALS,
AD- 669 099

CRYSTAL STRUCTURE
THE INVESTIGATION OF SILICON
CARBIDE BY A TRAVELLING SOLVENT
METHOD.
AD- 654 305

ETCHING
METHODS OF SiC SURFACE AND p-n
JUNCTION TREATMENT,
AD- 697 569

FILAMENTS
BOND STRENGTH CHARACTERISTICS OF
ELECTRODEPOSITED NICKEL ON BORON
AND SILICON CARBIDE FILAMENTS
(REINFORCED COMPOSITES),
AD- 688 863

*SILICON DIOXIDE
ETCHING
RF Sputter Etching of Al, SiO₂,
and Photoresist.
AD- 757 878

SOLUBILITY
The Rate of Dissolution of
Amorphous Silica in Water.
Inaccessibility of Crack Tips in
Glass.
AD- 762 767

*SINGLE CRYSTALS
The Growth and Characterization
of Potassium and Rubidium Azide
Single Crystals,
AD-A032 619
High Performance Pyroelectric
Materials.
AD-A049 204

CARBIDES

INVESTIGATION OF SINGLE-CRYSTAL
DIMOLYBDENUM CARBIDE.
AD- 503 613

SPHERES
THE PREPARATION OF ORIENTED
SINGLE CRYSTAL SPHERES OF
INTERMETALLIC COMPOUNDS BETWEEN THE
RARE EARTH AND IRON GROUP METALS.
AD- 637 803

*SODIUM CHLORIDE
ETCHING
ELECTRONIC AND IONIC PROCESSES
IN SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES),
AD- 675 421

*SOLAR CELLS
Low Reflectivity Solar Cells.
AD-A025 922
Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431

FILMS
IMPROVED THIN-FILM SOLAR CELLS.
AD- 476 696

SEMICONDUCTING FILMS
RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454

*SPACECRAFT
Second Surface Thermal Control
Mirrors for Reflection Control.
Volume I.
AD-A034 863

*SPARK MACHINING
GERMANIUM
SPARK EROSION CUTTING OF
GERMANIUM.
AD- 708 756

*SPECTRUM ANALYZERS
ULTRAVIOLET SPECTROSCOPY
DEVELOPMENT OF DIFFRACTION
GRATINGS FOR THE FAR ULTRAVIOLET.
AD- 655 098

SUBJECT INDEX-19
UNCLASSIFIED ZOM08

SIL-SPE

UNCLASSIFIED

*SPOT WELDING BONDING

Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-Weld
Bonding.
AD-8008 190

*SPOT WELDS BONDING

Development of Corrosion
Resistant Surface Treatments for
Aluminum Alloys for Spot-Weld
Bonding.
AD-8008 190

*SPRAYS

EVAPORATION
QUARTERLY BULLETIN OF THE
DIVISION OF MECHANICAL ENGINEERING
AND THE NATIONAL AERONAUTICAL
ESTABLISHMENT.
AD- 689 274

*SPUTTERING

High-Reliability, Low-Cost
Integrated Circuits.
AD-A049 763
Sputter Damage in GaAs Exposed
to Low Energy Argon Ions.
AD-A080 119

FEASIBILITY STUDIES

A Study of RF Sputter Etching in
an Argon Plasma Using Silicon as a
Target.
AD- 742 436

SEMICONDUCTOR DEVICES

Sputtering Technology for
Improved Electron Devices.
AD-8002 612

*STAINLESS STEEL

PHASE STUDIES
ON THE USE OF COLOUR ETCHING
TECHNIQUES FOR STAINLESS STEELS
(ueber die Anwendung von
Farbaetzungen bei Rostfreien
Staehlen).
AD- 699 723

*STATIC LOADS

Chemical Durability Improvement
and Static Fatigue of Glasses.
AD-A066 978

*STEEL

Gas Washing of Fracture Surfaces
by Explosive Detonation Products.
AD-A044 951
The Nature of the White-etching
Surface Layers Produced During
Reaming Ultra-high Strength Steel.
AD-A076 864
A Double-Etching Technique for
Microstructural Analysis of Steel.
AD-A082 873

CHEMICAL MILLING

CHEMICAL MILLING HIGH-
TEMPERATURE ALLOYS AND STEELS.
AD- 829 039

CORROSION RESISTANT ALLOYS

APPLICATION OF THE POTENTIAL
POLARIZATION IN THE STUDY AND IN
THE METALLOGRAPHY OF CORROSION
RESISTANT STEELS.
AD- 841 860

HEAT TREATMENT

GRAIN BOUNDARY SEGREGATION OF
IMPURITIES IN METALS AND
INTERGRANULAR BRITTLE FRACTURE.
AD- 684 497

MICROSTRUCTURE

METALLOGRAPHIC TECHNIQUE FOR THE
DEVELOPMENT OF MICROSTRUCTURAL
CONSTITUENTS IN GUN STEEL.
AD- 707 400

*SURFACE ACTIVE SUBSTANCES

The Adsorption of CO on Planar
and Oxygen-Etched Silicon Surfaces.
AD-A060 127

*SURFACE CHEMISTRY

Chemically Modified Electrodes.
XIV. Attachment of Reagents to
Oxide-Free Glassy Carbon Surfaces.
Electroactive RF Polymer Films on

Carbon and Platinum Electrodes.

AD-A061 427
Surface Treatment for Aluminum
Bonding.
AD-A076 950
Etching Studies on Singly and
Doubly Rotated Quartz Plates.
AD-A081 729
Surface Characterization of
Chemically Treated Titanium and
Titanium Alloys.
AD-A084 171

*SURFACE FINISHING

Investigation of Advanced
Protective and Antireflection
Coatings for Halide Optics.
AD-A003 631
Chemically Polished Quartz.
AD-A048 077
Chromate-Free Method of
Preparing Aluminum Surfaces for
Adhesive Bonding. An Etchant
Composition of Low Toxicity.
AD-A056 241
Surface Characterization of
Chemically Treated Titanium and
Titanium Alloys.
AD-A084 171

*SURFACE PROPERTIES

The Effects of Surface
Structural Properties on Laser-
Induced Damage at 1.06 Micrometers.
AD-A019 325
Gas Washing of Fracture Surfaces
by Explosive Detonation Products.
AD-A044 951

SILICON

INFLUENCE OF ACTIVE GASES ON THE
ELECTROPHYSICAL PROPERTIES OF THE
SURFACE OF SILICON.
AD- 684 014

*SURFACE WAVES

Modal Analysis of SAW Convolver.
AD-A056 809

*SURFACES

Surface Characterization of

UNCLASSIFIED

Titanium and Titanium Alloys. Part II. Effect on Ti-6Al-4V Alloy of Laboratory Chemical Treatments. AD-A027 134

Surface Characterization of Titanium and Titanium Alloys. Part III. Effect on Ti (c.p.) and Ti-8Mn of Laboratory Chemical Treatments. AD-A032 954

Surface Treatment for Aluminum Bonding. AD-A076 950

*TANTALUM COMPOUNDS ETCHING

EFFECT OF KILOVOLT ELECTRONS ON THE ETCH RATE OF A1203 AND Ta2O5. AD- 696 861

*TEETH

Acid Etch Characteristics of Prismatic Enamel. AD-A024 730

Enhancing Retention of Acid Etch Resin Restorations in Primary Teeth. AD-A026 852

*TELLURIDES

Metal-Insulator-Semiconductor Studies of Lead Telluride. AD-A038 996

*TEMPERATURE CONTROL

Second Surface Thermal Control Mirrors for Reflection Control. Volume I. AD-A034 863

*TEMPLATES

GLASS FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION. AD- 464 486

*TEST METHODS

A Technique for Assessing the Durability of Structural Adhesives. AD-A057 197

*THIN FILM STORAGE DEVICES

DATA STORAGE SYSTEMS HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 681 892

HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 688 178

MANUFACTURING

HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 691 130

SANDWICH CONSTRUCTION

HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 668 242

HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 673 143

*THIN FILMS

Semiconductor-Insulator Structures for the 1- to 2-Micrometers Region. AD-A032 970

Thin-Film Dye Laser with Etched Cavity. AD-A033 803

Reliability Study of Doped Aluminum Conductor Films. AD-A050 677

WAVEGUIDES

Thin Film Optical Waveguide Technology. AD- 919 567

*TIMING DEVICES

Tantalum Nitride Thin-Film Radiometer for Electronic Timer of XM732 Proximity Fuze. AD-A020 670

*TITANIUM ALLOYS

Thermal Etching of Beta Ti-V Alloys. AD- 772 045

Nondestructive Testing Techniques for Diffusion Bonded

Titanium Structures.

AD- 775 466 Surface Characterization of Titanium and Titanium Alloys. Part II. Effect on Ti-6Al-4V Alloy of Laboratory Chemical Treatments. AD-A027 134

Surface Characterization of Titanium and Titanium Alloys. Part III. Effect on Ti (c.p.) and Ti-8Mn of Laboratory Chemical Treatments. AD-A032 954

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part I. Surface Chemistry of Failure Surfaces. AD-A081 727

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part II. Etching of Ti6Al4V and its Effect on Evaporated uoid and Commercial Adhesive Adhesion. AD-A081 728

Surface Characterization of Chemically Treated Titanium and Titanium Alloys. AD-A084 171

ALUMINUM ALLOYS

A STUDY OF THE CRYSTAL STRUCTURE OF TI-AL ALLOYS AND HYDROGEN INDUCED EXPANSIONS. AD- 801 472

CHEMICAL MILLING

Advanced Chemical Milling Processes. AD- 727 620

ELECTROPLATING

Pretreatment of Titanium for Subsequent Electrodeposition of Metal. AD- 748 525

ETCHING

Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching.

SUBJECT INDEX-21

UNCLASSIFIED ZOM08

TAN-TIT

UNCLASSIFIED

AD- 768 058

STRESS CORROSION

SST Technology Follow-On Program, Phase I. Compatibility of SST Materials with Titanium Alloys. Volume I. Flyaway Materials.

AD- 902 458

SURFACE PROPERTIES

HYDROGEN-INDUCED EXPANSIONS IN TITANIUM-ALUMINUM ALLOYS.

AD- 679 722

*TRANSDUCERS

MANUFACTURING

METHOD FOR FABRICATING HIGH FREQUENCY SURFACE WAVE TRANSDUCERS.

AD- 693 812

Fabrication of Elastic Surface Devices by Chemical Etching.

AD- 758 762

*TRANSISTOR AMPLIFIERS

Monolithic 20W 2GHz Transistor and Monolithic 5W 4GHz Transistor.

AD-A068 165

*TRANSISTORS

V Groove M.O.S. Transistor Technology.

AD- 773 296

Monolithic 20W 2GHz Transistor and Monolithic 5W 4GHz Transistor.

AD-A068 165

ELECTRON BEAMS

Production Engineering Measure for an Electron-Beam Machine and Microwave Transistors.

AD- 900 280

GALLIUM ALLOYS

DEVELOPMENT OF GALLIUM ARSENIDE-PHOSPHIDE GRADED BAND-GAP BASE TRANSISTOR STRUCTURES.

AD- 467 531

MANUFACTURING

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES

AND TO INSURE THE RELIABILITY OF THE C600 SERIES FIELD EFFECT TRANSISTORS.

AD- 606 477

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND INCREASE THE RELIABILITY OF THE 2N328A TRANSISTOR.

AD- 614 823

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS.

AD- 619 295

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS.

AD- 635 814

PRODUCTION ENGINEERING MEASURE FOR SILICON NPN SWITCHING TRANSISTORS.

AD- 637 114

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.

AD- 801 736

RELIABILITY (ELECTRONICS)

PRODUCTION ENGINEERING MEASURE TO INCREASE THE RELIABILITY OF THE TRANSISTOR TYPE 22N2034.

AD- 606 191

SILICON

TRANSISTOR, VHF, SILICON, POWER (10W-500MC).

AD- 622 879

SILICON, PNP, MEXA TRANSISTOR TYPES JAN 2N328A AND JAN 2N329A.

AD- 636 762

SILICON, PNP, MEXA TRANSISTOR, TYPES 2N328A JAN AND 2N329A JAN.

AD- 637 020

SONAR EQUIPMENT

5-Kilowatt, 1-Kilovolt, Laminated Sonar Transistor.

AD- 860 343

*TURBINE WHEELS

Integral, Low-Cost, High-Temperature Turbine Feasibility Demonstrator (Small Laminated Axial Turbine Program).

AD-A038 674

*ULTRASONIC RADIATION

ACOUSTIC FILTERS
Ion Beam Etching of Reflective Array Filters.

AD- 758 934

*VANADIUM ALLOYS

Thermal Etching of Beta Ti-V Alloys.

AD- 772 045

*VAPOR PHASES

Vapor-Phase Etching and Polishing of GaAs Using Arsenic Trichloride.

AD-A051 568

*VAPOR PLATING

ELECTRON TUBE PARTS

CHEMICAL VAPOR DEPOSITED MATERIALS FOR ELECTRON TUBES.

AD- 672 095

*VARACTOR DIODES

Hyperabrupt Varactor Voltage-Controlled Oscillators.

AD-A047 522

*VIDICONS

PERFORMANCE(ENGINEERING)

Silicone Diode Target Tube Development.

AD- 912 287

*VOLTAGE CONTROLLED OSCILLATORS

Hyperabrupt Varactor Voltage-Controlled Oscillators.

AD-A047 522

*WAFERS

X RAY DIFFRACTION

Fabrication Procedure for Silicon Membrane X-Ray Lithography Masks.

AD- 769 857

*WAVEGUIDES

Acoustic Ridge Waveguide Technology.

AD-A020 745

Acoustic Ridge Waveguide

SUBJECT INDEX-22
UNCLASSIFIED Z0M08

TRA-WAV

UNCLASSIFIED

Technology.
AD-A029 510

THIN FILMS
Thin Film Optical Waveguide
Technology.
AD- 919 567

*X RAY DIFFRACTION
MASKING
Fabrication Procedure for
Silicon Membrane X-Ray Lithography
Masks.
AD- 769 857

*X RAYS
Modeling Validation, Techniques
and Applications for X-Ray
Lithography.
AD-A042 019

*ZINC
ETCHED CRYSTALS
ON THE SLOPE OF ETCH PITS.
AD- 665 280

*ZINC ALLOYS
GRAIN BOUNDARIES
Observations on Grain Boundary
Etching Behavior and Its Relation
to Nonequilibrium Boundary Solute
Enrichment.
AD- 720 013

*ZIRCONIUM COMPOUNDS
ETCHING
CHEMICAL TINTING OF HAFNIUM AND
ZIRCONIUM CARBIDES FOR
METALLOGRAPHIC EXAMINATION,
AD- 671 925

SUBJECT INDEX-23
UNCLASSIFIED ZOM08

X R-ZIR

UNCLASSIFIED
PERSONAL AUTHOR INDEX

ABRUNA, H. * * *	ARTICLES), AD- 675 421	Insulated Gate Field-Effect Transistor. AD-A047 108
Chemically Modified Electrodes. XIV. Attachment of Reagents to Oxide-Free Glassy Carbon Surfaces. Electroactive RF Polymer Films on Carbon and Platinum Electrodes. AD-A061 427	*ANTAL, JOHN J. * * *	BARRY, MICHAEL D. * * *
	Radiography with the Fission Neutrons from Californium-252. AD-A045 362	Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A021 905
*AFANASEVA, G. M. * * *	APPLEBAUM, J. * * *	Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A030 777
METHODS OF SiC SURFACE AND p-n JUNCTION TREATMENT. AD- 697 569	Electron Resist. AD-A044 282	BARTAS, J. * * *
AHLBURN, BYRON T. * * *	Diffraction Grating Development. AD-A008 199	Diffraction Grating Development. AD-A008 199
Silicone Diode Target Tube Development. AD- 912 287	*ARSLAMBEKOV, V. A. * * *	BARTELT, JOHN * * *
ALIM-MARVASTI, F. * * *	INFLUENCE OF ACTIVE GASES ON THE ELECTROPHYSICAL PROPERTIES OF THE SURFACE OF SILICON, AD- 684 014	IC Fabrication Using Electron-Beam Technology. AD-A082 237
The Rate of Dissolution of Amorphous Silica in Water. Inaccessibility of Crack Tips in Glass. AD- 762 767	AVERY, JAMES * * *	BARTELT, JOHN L. * * *
*ALLISON, JAMES F. * * *	Low Reflectivity Solar Cells. AD-A025 922	IC Fabrication Using Electron-Beam Technology. AD-A061 460
INTEGRATED LOGIC NETWORKS. AD- 680 411	*BAKER, C. E. * * *	IC Fabrication Using Electron-Beam Technology. AD-A061 721
ALUSOW, JOHN A. * * *	THE CHLORINE ETCHING OF SINGLE CRYSTAL SILICON, AD- 681 798	*BARTLETT, ROBERT W. * * *
Surface-Wave Resonators Using Grooved Reflectors. AD-A017 356	*BARNET, F. ROBERT * * *	GROWTH, PROCESSING AND CHARACTERIZATION OF BETA-SILICON CARBIDE SINGLE CRYSTALS, AD- 669 099
ANDREWS, G. A. * * *	Carbon Fiber Microstructure. AD- 740 315	*BATE, R. T. * * *
Anodic Etching - A Method of Detecting Grinding Burns on Chromium Plated Steel Parts, AD-A017 689	BARR, RONALD E. * * *	Semiconductor-Insulator Structures for the 1- to 2-Micrometers Region. AD-A022 970
*ANDRONIKASHVILI, E. L. * * *	Chronic Oxygen Electrodes - A Feasibility Study. AD- 748 422	*BATES, R. D., JR. * * *
ELECTRONIC AND IONIC PROCESSES IN SOLIDS, NO. 1, 1964 (SELECTED	BARRETT, D. L. * * *	Interaction of Semiconductor
	Gallium Arsenide Vertical Channel	

PERSONAL AUTHOR INDEX-1
UNCLASSIFIED
ZOM08

UNCLASSIFIED

- GaAs,
AD-A074 282
- *BOTVINKIN, O. K. * * *
The Work of the State Institute of
Glass in the Area of Glass
Hardening,
AD-A014 053
- *BOWEN, B. B. * * *
Development of Corrosion Resistant
Surface Treatments for Aluminum
Alloys for Spot-Weld Bonding.
AD-B008 190
- BOYD, J. T. * * *
A Geodesic Optical Waveguide Lens
Fabricated by Anisotropic Etching.
AD-A078 202
- BRADY, JOHN * * *
Criteria for Successful Composite
Restorations.
AD-A071 064
- BRANDMAYR, RONALD J. * * *
Etching Studies on Singly and
Doubly Rotated Quartz Plates.
AD-A081 729
- *BRASSARD, THERESA V. * * *
METALLOGRAPHIC TECHNIQUE FOR THE
DEVELOPMENT OF MICROSTRUCTURAL
CONSTITUENTS IN GUN STEEL.
AD- 707 400
- BRISSEY, F. L. * * *
An Experimental Technique for
Monitoring Dynamic Cracks,
AD- 754 762
- BROGAN, WILLIAM T. * * *
Ion Beam Etching of Reflective
- Array Filters.
AD- 758 934
- Ion-Beam Etching of Surface
Gratings.
AD-A000 502
- *BRUK, M. V. * * *
Plasma Gabbitt Surfacing of the
Steel Base of Bearings,
AD- 750 517
- BUCHSBAUM, W. H. * * *
MICROMINIATURE MONOLITHIC
CROSSPOINT INTERCONNECTIONS.
AD- 664 126
- BULLIS, LAUREN H. * * *
Design and Fabrication of a Thin-
Film Radiometer for Electronic
Timer of XM732 Proximity Fuze.
AD-A005 615
- Tantalum Nitride Thin-Film
Radiometer for Electronic Timer of
XM732 Proximity Fuze.
AD-A020 670
- BURGESS, J. F. * * *
PHOTOMETALLIC PROCESS
INVESTIGATION.
AD- 635 143
- *BUTLER, JACK F. * * *
LONG-WAVELENGTH INFRARED Pb(1-
X)SN(X)TE DIODE LASERS.
AD- 673 601
- *BYRON, ERNEST * * *
THIN FILM CIRCUIT TECHNIQUES,
AD- 654 427
- CALABRESE, DONALD W. * * *
DEVELOPMENT OF A MICROELECTRONICS
- CAPABILITY AND FACILITY AT RADC.
AD- 484 781
- CAMPE, G. * * *
Diffraction Grating Development.
AD-A008 199
- *CARONARO, M. * * *
Study of the Switching Mechanism in
Bistable Amplifiers with
Application to Their Development,
Optimization and Construction.
AD-A036 266
- CARDILLO, MARK J. * * *
The Adsorption of CO on Planar and
Oxygen-Etched Silicon Surfaces,
AD-A060 127
- CARTER, HAROLD G. * * *
METALLOGRAPHIC METHODS ETCHING FOR
BAINITIC FINE CARBIDES. A
METALLOGRAPHIC METHOD FOR REVEALING
THE FINE CARBIDES IN BAINITE FORMED
DURING CONTINUOUS COOLING IN A
NICKEL-CHROMIUM-MOLYBDENUM
COMPOSITION.
AD- 629 644
- *CASSIDY, MICHAEL * * *
PRODUCTION ENGINEERING MEASURE FOR
SILICON OVERLAY TRANSISTORS.
AD- 635 814
- CAYWOOD, J. M. * * *
Semiconductor-Insulator Structures
for the 1- to 2-Micrometers Region.
AD-A022 970
- *CHALIFOUR, H. R. * * *
Manufacturing Methods and
Technology Engineering High-
Efficiency, High-Power Gallium
Arsenide Read-Type IMPATT Diodes.

PERSONAL AUTHOR INDEX-3
UNCLASSIFIED
ZOM08

BOT-CHA

UNCLASSIFIED

Volume I. AD-A048 578	AD- 636 762	AD- 769 857
*CHANG, WILLIAM S. C. Fresnel Lens and Beam Control in Optical Waveguide. AD-A080 106	SILICON, PNP, MEXA TRANSISTOR, TYPES 2N328A JAN AND 2N329A JAN. AD- 637 020	CONE, DONALD R. * * * HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 668 242
*CHASE, ARMOND B. ETCHING BEHAVIOR OF IN2O3 GROWN FROM PbO-B2C3. AD- 668 449	*CIHAL, VLADIMIR * * * APPLICATION OF THE POTENTIAL POLARIZATION IN THE STUDY AND IN THE METALLOGRAPHY OF CORROSION RESISTANT STEELS. AD- 841 860	*CONNICK, W. * * * DISLOCATION ETCHING OF CYCLOTRIMETHYLENE TRINITRAMINE CRYSTALS. AD- 689 936
ETCHING AND REGROWTH OF CUPROUS CHLORIDE, AD- 674 757	CLARK, J. J. * * * Integral, Low-Cost, High- Temperature Turbine Feasibility Demonstrator (Small Laminated Axial Turbine Program). AD-A038 674	COOK, C. F., JR. * * * Interaction of Semiconductor Materials with Laser Radiation at 10.6 Micrometers. AD- 753 918
Coordination Chemistry and Kinetics of Preferential Etching on Surfaces of TiO2 (Rutile). AD- 759 259	CLARKE, R. C. * * * Indium Phosphide for High Frequency Power Transistors. AD-A079 812	*COOK, CHARLES F., JR. * * * MORPHOLOGICAL FEATURES OF HEXAGONAL FERRITES. AD- 653 335
CH'EN, DANIEL * * * Production Engineering Measure for an Electron-Beam Machine and Microwave Transistors. AD- 900 280	*CLARKE, R. N. * * * TRANSISTOR, VHF, SILICON, POWER (10W-500MC). AD- 622 879	DIRECT SOLUTION OF COMPLEX CRYSTAL STRUCTURES BY ELECTRON MICROSCOPY. AD- 713 554
*CHEVASHOVA, K. L. * * * A METHOD OF MAKING MESH FILTERS FROM MATERIALS AND ALLOYS. AD- 635 828	*COCKING, J. * * * PRODUCTION ENGINEERING MEASURE TO INCREASE THE RELIABILITY OF THE TRANSISTOR TYPE 22N2034. AD- 606 191	COOK, R. T. * * * Ion Beam Superpolishing of Metal Mirrors for High Energy Lasers. AD-A031 106
CHIANG, SHANG-YI * * * IC Fabrication Using Electron-Beam Technology. AD-A064 770	COGSWELL, D. L. * * * HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 802 576	COURIER, J. * * * PRODUCTION ENGINEERING MEASURE TO INCREASE THE RELIABILITY OF THE TRANSISTOR TYPE 22N2034. AD- 606 191
*CHIEN, FRANK * * * SILICON, PNP, MEXA TRANSISTOR TYPES JAN 2N328A AND JAN 2N329A.	*COHEN, RONALD A. * * * Fabrication Procedure for Silicon Membrane X-Ray Lithography Masks.	CRISHAL, J. * * * TRANSISTOR, VHF, SILICON, POWER (10W-500MC). AD- 622 879

PERSONAL AUTHOR INDEX-4
UNCLASSIFIED ZOM08

CHA-RIS

UNCLASSIFIED

*DAMIANO, V. V. * * *	DI PAOLA, R. * * *	AD-AC47 108
RESEARCH IN THE GENERAL FIELD OF SUBSTRUCTURE AND DISLOCATION NETWORKS IN METALLIC CRYSTALS. AD- 610 434	PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND INCREASE THE RELIABILITY OF THE 2N328A TRANSISTOR. AD- 614 823	Indium Phosphide for High Frequency Power Transistors. AD-A079 812
*DANCE, K. * * *	*DIXON, CHARLES J. * * *	*DUKE, WILLIAM G. * * *
PRODUCTION ENGINEERING MEASURE FOR TYPE CR-(XM-60)/U CRYSTAL UNITS. AD- 642 425	Thin Film Hybrid Pulse Width Discriminator Circuit Fabrication. AD- 900 343	A Study of RF Sputter Etching in an Argon Plasma Using Silicon as a Target. AD- 742 436
DAS, B. N. * * *	DOLAN, G. J. * * *	*DYLLA, H. FREDERICK * * *
THE INVESTIGATION OF SILICON CARBIDE BY A TRAVELLING SOLVENT METHOD. AD- 654 305	Preparation of Variable Thickness Microbridges Using Electron Beam Lithography and Ion Etching. AD-A043 668	The Adsorption of CO on Planar and Oxygen-Etched Silicon Surfaces. AD-A060 127
DENISENKO, D. N. * * *	*DOREMUS, ROBERT H. * * *	*ECKART, DONALD W. * * *
The Work of the State Institute of Glass in the Area of Glass Hardening. AD-A014 053	The Rate of Dissolution of Amorphous Silica in Water. Inaccessibility of Crack Tips in Glass. AD- 762 767	DIRECT SOLUTION OF COMPLEX CRYSTAL STRUCTURES BY ELECTRON MICROSCOPY. AD- 713 554
DENNIS, C. * * *	The Rate of Dissolution of Amorphous Silica in Water. Inaccessibility of Crack Tips in Glass. AD- 762 767	ELDRIDGE, G. W. * * *
HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES. AD- 661 042	Fracture Strength of Soda-Lime Glass after Etching. AD- 783 086	Indium Phosphide for High Frequency Power Transistors. AD-A079 812
DENWIS, CHARLES F. * * *	DORIAN, M. F. * * *	The Implantation of Impurity Ions and Proton Bombardment in Indium Phosphide. AD-A080 144
INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 653 628	Second Surface Thermal Control Mirrors for Reflection Control. Volume I. AD-A034 863	ENSTROM, R. E. * * *
DE SIMON, LASZLO B. * * *	*DRIVER, M. C. * * *	300 C SEMICONDUCTOR FOR POWER DEVICES. AD- 815 000
High Temperature Microscopy of Porcelain-Precious Alloys, AD-A039 647	Gallium Arsenide Vertical Channel Insulated Gate Field-Effect Transistor. AD- 606 191	III-V Heterojunction Structures for Long-Wavelength Injection Laser. AD-A054 670
DES ROCHES, F. * * *		*EPSTEIN, HOWARD * * *
PRODUCTION ENGINEERING MEASURE TO INCREASE THE RELIABILITY OF THE TRANSISTOR TYPE 2N2034. AD- 606 191		Production Engineering Measure for Low Noise Solid-State Oscillator. AD-A009 775

PERSONAL AUTHOR INDEX-5
UNCLASSIFIED ZOM08

DAM-EPS

UNCLASSIFIED

- ETTENBERG, M. * * *
111-V Heterojunction Structures for
Long-Wavelength Injection Laser.
AD-A054 670
- *EVERETT, P. * * *
FABRICATION OF GLASS MASKS, AND
THEIR APPLICATION TO THIN-FILM
CIRCUIT DEPOSITION,
AD- 464 486
- FAN, JOHN C. * * *
Auger Spectroscopy Studies of the
Oxidation of Amorphous and
Crystalline Germanium.
AD-A013 949
- FARRELL, JOHN P. * * *
DEVELOPMENT OF A MICROELECTRONICS
CAPABILITY AND FACILITY AT RADC.
AD- 484 781
- FELDMANE, E. E. * * *
EFFECT OF DISLOCATION DENSITY ON
THE RADIATION EXPANSION OF THE
VOLUME OF CRYSTALS,
AD- 694 802
- *FENG TUAN, * * *
A STUDY OF DISLOCATION STRUCTURE OF
SUBBOUNDARIES IN MOLYBDENUM SINGLE
CRYSTALS,
AD- 575 563
- FEUERSANGER, ALFRED E. * * *
High Capacitance Thin Film
Structures.
AD- 863 038
- FILLER, RAYMOND L. * * *
Chemically Polished Quartz.
AD-A048 077
- Etching Studies on Singly and
Doubly Rotated Quartz Plates.
AD-A081 729
- FINN, MARY C. * * *
ELECTROCHEMICAL DEMBER EFFECT IN
SEMICONDUCTORS,
AD- 614 180
- *FLEISCHAUER, PAUL D. * * *
Coordination Chemistry and Kinetics
of Preferential Etching on Surfaces
of TiO₂ (Rutile).
AD- 759 259
- *FOSTER, D. L. * * *
The Growth and Characterization of
Potassium and Rubidium Azide Single
Crystals,
AD-A032 619
- FREESE, JACK * * *
PRODUCTION ENGINEERING MEASURE FOR
SILICON NPN SWITCHING TRANSISTORS.
AD- 637 114
- *FURST, D. G. * * *
Integral, Low-Cost, High-
Temperature Turbine Feasibility
Demonstrator (Small Laminated Axial
Turbine Program).
AD-A038 674
- GARNIS, ELIZABETH A. * * *
Chromate-Free Method of Preparing
Aluminum Surfaces for Adhesive
Bonding. An Etchant Composition of
Low Toxicity.
AD-A056 241
- A Technique for Assessing the
Durability of Structural Adhesives.
AD-A057 197
- A Round-Robin Evaluation of
- Adhesive Bonding Processes Related
to the Solder Industry.
AD-A065 360
- *GATOS, H. C. * * *
CHEMICAL BEHAVIOUR OF
SEMICONDUCTORS: ETCHING
CHARACTERISTICS,
AD- 633 185
- *GELBERGER, P. P. * * *
Moat-Etched Two-Phase Charge-
Coupled Devices,
AD- 782 980
- GELLES, H. * * *
Ion Beam Superpolishing of Metal
Mirrors for High Energy Lasers.
AD-A031 106
- *GENNARO, ALBERT * * *
Light Emitting Diodes for Fiber
Optic Communications.
AD-A043 727
- Light Emitting Diodes for Fiber
Optic Communications.
AD-A068 348
- Light Emitting Diodes for Fiber
Optic Communications.
AD-A071 158
- GETIYA, M. SH. * * *
ELECTRONIC AND IONIC PROCESSES IN
SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES).
AD- 675 421
- *GHANDHI, S. K. * * *
Research on Microwave Junction Gate
Field Effect Transistors.
AD-A080 031
- GHANDHI, SORAB K.

TTE-HAN

PERSONAL AUTHOR INDEX-6
UNCLASSIFIED 20M08

UNCLASSIFIED

- * * *
Vapor-Phase Etching and Polishing
of GaAs Using Arsenic Trichloride,
AD- A051 568
- *GLENSKI, F. J. * * *
CHEMICAL MILLING HIGH-TEMPERATURE
ALLOYS AND STEELS.
AD- 829 039
- GOBLE, G. J. * * *
THE CHLORINE ETCHING OF SINGLE
CRYSTAL SILICON,
AD- 681 798
- GOLDSTEIN, NORMAN * * *
A STANDARDIZED METHOD FOR MAKING
NEUTRON FLUENCE MEASUREMENTS BY
FISSION FRAGMENT TRACKS IN
PLASTICS,
AD- 643 540
- GOODMAN, STEPHEN R. * * *
GRAIN BOUNDARY SEGREGATION OF
IMPURITIES IN METALS AND
INTERGRANULAR BRITTLE FRACTURE.
AD- 684 497
- GORDIN, V. L. * * *
Certain Chemical Properties of
Indium Phosphide,
AD- 738 682
- *GORDON, STANLEY H. * * *
A MINIATURE MONOSTRIP NANOSECOND
PULSE DELAY LINE,
AD- 650 977
- *GRANTHAM, D. H. * * *
Sputtering Technology for Improved
Electron Devices.
AD- B002 612
- *GRECO, V. PETER * * *
UNDER CONDITIONS APPROACHING PLANE
STRAIN.
AD- 680 123
- HALL, D. * * *
Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
AD- 912 475
- *HANSEL, V. G. * * *
Pretreatment of Titanium for
Subsequent Electrodeposition of
Metal,
AD- 748 525
- HARMAN, THEODORE C. * * *
LONG-WAVELENGTH INFRARED Pb(1-
X)Sn(X)Te DIODE LASERS.
AD- 673 601
- *HARRIS, J. S. * * *
Diffraction Grating Development.
AD- A008 199
- HARVEY, DONALD J. * * *
RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454
- *HARVEY, W. W. * * *
ELECTROCHEMICAL DEMBER EFFECT IN
SEMICONDUCTORS,
AD- 614 180
- HAWORTH, W. L. * * *
SPARK EROSION CUTTING OF GERMANIUM.
AD- 708 756
- HEBB, EMMA LEE * * *
Design and Fabrication of a Thin-
Film Radiometer for Electronic
Timer of XM732 Proximity Fuze.
AD- A005 615
- * * *
BOND STRENGTH CHARACTERISTICS OF
ELECTRODEPOSITED NICKEL ON BORON
AND SILICON CARBIDE FILAMENTS
(REINFORCED COMPOSITES).
AD- 688 863
- *GREENE, NORBERT D. * * *
PRINCIPLES OF METALLOGRAPHIC
ETCHING.
AD- 616 786
- GREER, PAUL * * *
PRODUCTION ENGINEERING MEASURE FOR
SILICON OVERLAY TRANSISTORS.
AD- 635 814
- GRIFF, WILLIAM * * *
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 667 368
- GUKOV, O. YA. * * *
Certain Chemical Properties of
Indium Phosphide,
AD- 738 682
- *HAGUEL, P. I. * * *
Modeling Validation, Techniques and
Applications for X-Ray Lithography.
AD- A042 019
- * * *
Line-Profile Resist Development
Simulation Techniques,
AD- A052 932
- *HAHN, ALLEN W. * * *
Chronic Oxygen Electrodes - A
Feasibility Study.
AD- 748 422
- *HAHN, G. T. * * *
PLASTIC FLOW IN THE LOCALE ON
NOTCHES AND CRACKS IN Fe-3Si STEEL

PERSONAL AUTHOR INDEX-7
UNCLASSIFIED ZOM08

GLE-E88

UNCLASSIFIED

HEWKE, RICHARD P. * * *
CHARGED PARTICLE TRACKS IN POLYMERS
NO. 7: SENSITIVITY ENHANCEMENT OF
LEXAN.
AD- 682 922

*HENRICH, VICTOR E. * * *
Auger Spectroscopy Studies of the
Oxidation of Amorphous and
Crystalline Germanium.
AD-A013 949

HERFERT, R. E. * * *
Development of Corrosion Resistant
Surface Treatments for Aluminum
Alloys for Spot-Weld Bonding.
AD-8008 190

HERMAN, M. * * *
RESEARCH IN THE GENERAL FIELD OF
SUBSTRUCTURE AND DISLOCATION
NETWORKS IN METALLIC CRYSTALS.
AD- 610 434

HERMANN, E. * * *
Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
AD- 912 475

HEWES, C. R. * * *
Semiconductor-Insulator Structures
for the 1- to 2-Micrometers Region.
AD-A022 970

*HEYERDAHL, NORMAN E. * * *
RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454

*HEYNICK, L. N. * * *
HIGH-INFORMATION-DENSITY STORAGE
SURFACES.
AD- 681 892

HEYNICK, LOUIS N. * * *
HIGH-INFORMATION-DENSITY STORAGE
SURFACES.
AD- 668 242

* * *
HIGH-INFORMATION-DENSITY STORAGE
SURFACES.
AD- 673 143

* * *
HIGH-INFORMATION-DENSITY STORAGE
SURFACES.
AD- 688 178

* * *
HIGH-INFORMATION-DENSITY STORAGE
— SURFACES.
AD- 691 130

*HICKS, ROBERT E. * * *
ADVANCEMENTS IN SPACE FLIGHT
HARDWARE THROUGH CHEMICAL MILLING.
AD- 804 296

*HILL, B. H. * * *
EFFECT OF KILOVOLT ELECTRONS ON THE
ETCH RATE OF Al2O3 AND Ta2O5,
AD- 696 861

HIRTH, J. P. * * *
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

*HOLMES, F. E. * * *
V Groove M.D.S. Transistor
Technology,
AD- 773 296

HOLMSTROM, R. * * *
THE GROWTH AND ETCHING OF Si
THROUGH WINDOWS IN SiO2,
AD- 658 248

HORTON, R. E. * * *
Anodize Optimization and Adhesive

PERSONAL AUTHOR INDEX-8
UNCLASSIFIED ZOM08

Evaluations for Repair
Applications.
AD-A061 759

*HOUSE, RICHARD A., II * * *
The Effects of Surface Structural
Properties on Laser-Induced Damage
at 1.06 Micrometers.
AD-A019 325

*HOWARD, JOE A. * * *
EFFECT ON ETCH RATE OF OXIDE
SURFACES AFTER ELECTRON
BOMBARDMENT.
AD- 833 329

*HU, CHENMING * * *
Thin-Film Dye Laser with Etched
Cavity,
AD-A033 803

*HUGET, EUGENE F. * * *
High Temperature Microscopy of
Porcelain-Precious Alloys,
AD-A039 647

HUGHES, D. * * *
PRODUCTION ENGINEERING MEASURE TO
INCREASE THE RELIABILITY OF THE
TRANSISTOR TYPE 22N2034.
AD- 606 191

HUI, WILLIAM L. * * *
IMPROVED THIN-FILM SOLAR CELLS.
AD- 476 696

*HUSAIN, S. A. * * *
FIELD EMISSION FROM CADMIUM
SULPHIDE,
AD- 646 957

*IVES, M. B. * * *
A STUDY OF LITHIUM FLUORIDE ETCH

ENK-IVE

UNCLASSIFIED

MORPHOLOGIES USING SILICA GEL. AD- 660 381	AD- 671 925	KHMELEVSKAYA, V. B. * * *
ON THE SLOPE OF ETCH PITS. AD- 665 280	KALET, M. * * *	Plasma Babbitt Surfacing of the Steel Base of Bearings. AD- 750 517
*JACOBSEN, P. S. * * *	MICROMINIATURE MONOLITHIC CROSSPOINT INTERCONNECTIONS. AD- 664 126	KHOKHLOV, B. A. * * *
SST Technology Follow-On Program, Phase I. Compatibility of SST Materials with Titanium Alloys. Volume I. Flyaway Materials. AD- 902 456	*KALNIN, D. O. * * *	GRINDING AND POLISHING LARGE PLATES FOR AIRCRAFT SKINS, AD- 688 783
JANOWSKI, KENNETH R. * * *	EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS. AD- 694 802	KIM, SEIHEE * * *
CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES FOR METALLOGRAPHIC EXAMINATION. AD- 671 925	*KAMOSHIDA, MOTOTAKA * * *	Thin-Film Dye Laser with Etched Cavity. AD-A033 803
JENSEN, P. E. * * *	Analysis of Aluminum Oxide Films on Silicon, AD- 747 019	KING, ABRAM O. * * *
Sputter Damage in GaAs Exposed to Low Energy Argon Ions. AD-A080 119	KAN, H. K. ALAN * * *	Transmission Microscopy of Ion- Bombardment Thinned Boron Carbide. AD- 715 857
*JENETT, R. E. * * *	Metal-Insulator-Semiconductor Studies of Lead Telluride. AD-A038 996	KING, JOHN G. * * *
Line-Profile Resist Development Simulation Techniques, AD-A052 932	*KATZ, R. NATHAN * * *	The Adsorption of CO on Planar and Oxygen-Etched Silicon Surfaces. AD-A060 127
*JOHARI, O. * * *	Transmission Microscopy of Ion- Bombardment Thinned Boron Carbide. AD- 715 857	KITAGUCHI, TOM * * *
FRACTURE MECHANISMS IN POLYCRYSTALLINE NONMETALLIC MATERIALS. AD- 686 301	KATZIR, A. * * *	PLANAR COAXIAL INTERCONNECTION TECHNIQUES. AD- 667 368
JOSLIN, DAVID E. * * *	Linearity and Enhanced Sensitivity of the Shipley AZ-1350B Photoresist, AD-A045 389	*KITCHMAN, LESTER A. * * *
Metal-Insulator-Semiconductor Studies of Lead Telluride. AD-A038 996	*KEARKUFF, THOMAS * * *	Design and Fabrication of a Mini- Film Ratiometer for Electronic Timer of XM732 Proximity Fuze. AD-A005 615
*JOYCE, ROBERT L. * * *	PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS. AD- 619 295	Tantalum Nitride Thin-Film Ratiometer for Electronic Timer of XM732 Proximity Fuze. AD-A020 670
CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES FOR METALLOGRAPHIC EXAMINATION,	*KEARNS, WILLIAM J. * * *	KMITA, T. G. * * *
	Fabrication of Elastic Surface Devices by Chemical Etching. AD- 758 762	METHODS OF SIC SURFACE AND P-n

PERSONAL AUTHOR INDEX-9
UNCLASSIFIED ZOM08

JAC-MIT

UNCLASSIFIED

JUNCTION TREATMENT,
AD- 697 569

*KOWN, JACK A. * * *

DIRECT SOLUTION OF COMPLEX CRYSTAL
STRUCTURES BY ELECTRON MICROSCOPY,
AD- 713 554

*KRASSNER, L. * * *

300 C SEMICONDUCTOR FOR POWER
DEVICES.
AD- 815 000

KRAUSS, G. * * *

REPLICATION OF FINE STRUCTURE IN
MARTENSITE,
AD- 644 652

*KRUMME, J. -P. * * *

ANODIC BEHAVIOR OF GAAS SINGLE
CRYSTALS AT INCREASED CURRENT
DENSITIES IN ALKALINE AND ACIDIC
SOLUTIONS.
AD- 652 300

*KUZNETSOV, A. YA. * * *

METHOD FOR INCREASING THE
MECHANICAL STRENGTH OF GLASS,
AD- 694 836

KVAVADZE, K. A. * * *

ELECTRONIC AND IONIC PROCESSES IN
SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES).
AD- 675 421

LACOURSE, WILLIAM C. * * *

MECHANISMS OF ATTACK ON GLASSES IN
AQUEOUS MEDIA.
AD- 641 500

LANE, CLYDE H. * * *

DEVELOPMENT OF A MICROELECTRONICS

CAPABILITY AND FACILITY AT RADC.
AD- 484 781

LANE, EDWARD K. * * *

RESEARCH ON RESIN-IMPREGNATED,
COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

LARRABEE, R. D. * * *

Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
AD- 912 475

LASKER, A. L. * * *

The Growth and Characterization of
Potassium and Rubidium Azide Single
Crystals.
AD- A032 619

*LAUCHNER, E. A. * * *

Anodic Etching - A Method of
Detecting Grinding Burns on
Chromium Plated Steel Parts,
AD- A017 689

*LAVENGOOD, R. E. * * *

An Experimental Technique for
Monitoring Dynamic Cracks,
AD- 754 762

LAVINE, M. C. * * *

CHEMICAL BEHAVIOUR OF
SEMICONDUCTORS: ETCHING
CHARACTERISTICS,
AD- 633 185

LAWLEY, A. * * *

ETCH-PITTING CHARACTERISTICS OF
HIGH-PURITY MOLYBDENUM.
AD- 633 601

LAWLEY, K. L. * * *

Semiconductor-Insulator Structures
for the 1- to 2-Micrometer Region.
AD- A022 970

*LAWSON, JAMES R. * * *

Silicone Diode Target Tube
Development.
AD- 912 287

LEBUS, JOHN W. * * *

Chemically Polished Quartz.
AD- A048 077

LEE, LINDA * * *

PRINCIPLES OF METALLOGRAPHIC
ETCHING.
AD- 616 786

LEE, YONGSIK * * *

Production Engineering Measure for
Low Noise Solid-State Oscillator.
AD- A009 776

LE MAY, I. * * *

A Double-Etching Technique for
Microstructural Analysis of Steel,
AD- A082 873

*LE MAY, IAIN * * *

ON THE USE OF COLOUR ETCHING
TECHNIQUES FOR STAINLESS STEELS
(ueber die Anwendung von
Farbaetzungen bei Rostfreien
Staehlen).
AD- 699 723

LEMMA, MURIEL A. * * *

Fabrication Procedure for Silicon
Membrane X-Ray Lithography Masks.
AD- 769 857

LESSOFF, HOWARD * * *

PERSONAL AUTHOR INDEX-10
UNCLASSIFIED ZOM08

KOH-ESS

UNCLASSIFIED

Electronic Materials Technology
(Semiconductors).
AD-A060 363

*LESTER, J. D. * * *

Ion Beam Superpolishing of Metal
Mirrors for High Energy Lasers.
AD-A031 106

LEVI, DAVID W. * * *

A Round-Robin Evaluation of
Adhesive Bonding Processes Related
to the Shelter Industry.
AD-A065 360

*LEVINE, SUMNER N. * * *

MECHANISMS OF ATTACK ON GLASSES IN
AQUEOUS MEDIA.
AD- 641 500

*LI, ROBERT C. * * *

Surface-Wave Resonators Using
Grooved Reflectors.
AD-A017 356

LI CH'I. * * *

A STUDY OF DISLOCATION STRUCTURE OF
SUBBOUNDARIES IN MOLYBDENUM SINGLE
CRYSTALS.
AD- 675 563

*LILLY, DAVID A. * * *

Metal-Insulator-Semiconductor
Studies of Lead Telluride.
AD-A038 996

*LING, FU-WEN * * *

Thermal Etching of Beta Ti-V
Alloys.
AD- 772 045

*LIVANOS, A. C. * * *

Linearity and Enhanced Sensitivity

of the Shipley AZ-13508
Photorealist.
AD-A045 389

*LOCKE, M. C. * * *

Anodize Optimization and Adhesive
Evaluations for Repair
Applications.
AD-A061 758

*LORTON, LEWIS * * *

Criteria for Successful Composite
Restorations.
AD-A071 064

*LOW, JOHN R., JR. * * *

GRAIN BOUNDARY SEGREGATION OF
IMPURITIES IN METALS AND
INTERGRANULAR BRITTLE FRACTURE.
AD- 684 497

*LUI, M. -W. * * *

A Double-Etching Technique for
Microstructural Analysis of Steel.
AD-A082 873

*LUKASZEK, THEODORE J. * * *

Mode Control and Related Studies of
VHF Quartz Filter Crystals.
AD- 736 758

LUKENS, J. E. * * *

Preparation of Variable Thickness
Microbridges Using Electron Beam
Lithography and Ion Etching.
AD-A043 668

LYNCH, CHARLES T. * * *

INVESTIGATION OF SINGLE-CRYSTAL
DIMOLYBDENUM CARBIDE.
AD- 803 613

MAHIEU, W. * * *

MECHANICAL BEHAVIOR OF BERYLLIUM
WIRE REINFORCED PLASTIC COMPOSITES.
PART II. TIME DEPENDENT MECHANICAL
PROPERTIES.
AD- 674 591

MAHONEY, J. P. * * *

Interaction of Semiconductor
Materials with Laser Radiation at
10.6 Micrometers.
AD- 753 918

*MANION, S. A. * * *

Measurement of Deformation in Alpha
Brass by Means of an Electrolytic
Thiosulfate Etch.
AD- 742 198

*MANNEX, HENRY R. * * *

AU-ZNTE SCHOTTKY BARRIER
FABRICATION BY LOW-ENERGY ION
ETCHING TECHNIQUES.
AD- 833 283

MARGOLIN, H. * * *

A STUDY OF THE CRYSTAL STRUCTURE OF
TI-AL ALLOYS AND HYDROGEN INDUCED
EXPANSIONS.
AD- 801 472

*MARGOLIN, HAROLD * * *

HYDROGEN-INDUCED EXPANSIONS IN
TITANIUM-ALUMINUM ALLOYS.
AD- 678 722

MARKINA, G. I. * * *

Certain Chemical Properties of
Indium Phosphide.
AD- 738 682

MARTIN, E. * * *

PRODUCTION ENGINEERING MEASURE TO
INCREASE THE RELIABILITY OF THE
TRANSISTOR TYPE 22N2034.

PERSONAL AUTHOR INDEX-11
UNCLASSIFIED ZOMOB

LES-ART

UNCLASSIFIED

- AD- 606 191
*MAWHINNEY, D. D. * * *
Hyperabrupt Varactor Voltage-
Controlled Oscillators.
AD-A047 522
- MAY, F. G. J. * * *
DISLOCATION ETCHING OF
CYCLOTRIMETHYLENE TRINITRAMINE
CRYSTALS.
AD- 689 936
- MAYER, JAMES W. * * *
Analysis of Aluminum Oxide Films on
Silicon.
AD- 747 019
- MAYHAN, KENNETH G. * * *
Chronic Oxygen Electrodes - A
Feasibility Study.
AD- 748 422
- MCAUSLAND, D. D. * * *
ON THE SLOPE OF ETCH PITS.
AD- 665 280
- MCCALL, J. L. * * *
A REVIEW OF METALLOGRAPHIC
PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS,
AD- 674 066
- MCCARTY, J. E. * * *
Anodize Optimization and Adhesive
Evaluations for Repair
Applications.
AD-A061 758
- *MCCLELLAN, J. F. * * *
DEVELOPMENT OF DIFFRACTION GRATINGS
FOR THE FAR ULTRAVIOLET.
AD- 655 098
- *MCCOY, S. M. * * *
Replica Techniques for Transmission
Electron Microscopy.
AD-A021 891
- MCDEVITT, NEIL T. * * *
Surface Characterization of
Titanium and Titanium Alloys. Part
II. Effect on Ti-6Al-4V Alloy of
Laboratory Chemical Treatments.
AD-A027 134
- * * *
Surface Characterization of
Titanium and Titanium Alloys. Part
III. Effect on Ti (C.P.) and Ti-
8Mn of Laboratory Chemical
Treatments.
AD-A032 954
- MCELROY, R. D. * * *
A STUDY OF LITHIUM FLUORIDE ETCH
MORPHOLOGIES USING SILICA GEL.
AD- 660 381
- *MCWHORTER, ALAN L. * * *
Enhanced Heteroepitaxy.
AD-A075 514
- *MEINDL, J. D. * * *
Advanced Technology for Micropower
Integrated Circuits.
AD-A005 629
- MELNGAILIS, JOHN * * *
Ion-Beam Etching of Surface
Gratings.
AD-A000 502
- MERSOL, STANLEY A. * * *
INVESTIGATION OF SINGLE-CRYSTAL
DIMOLYBDENUM CARBIDE.
AD- 803 613
- MIN NAI-PEN,
PERSONAL AUTHOR INDEX-12
UNCLASSIFIED ZOM08
- * * *
A STUDY OF DISLOCATION STRUCTURE OF
SUBBOUNDARIES IN MOLYBDENUM SINGLE
CRYSTALS.
AD- 675 563
- MITCHELL, IAN V. * * *
Analysis of Aluminum Oxide Films on
Silicon.
AD- 747 019
- MITCHELL, JOSEPH H. * * *
HIGH PERFORMANCE THIN FILMS FOR
MICROCIRCUITS.
AD- 662 748
- MODESTOVA, V. N. * * *
Effect of Alloying Components on
the Hydrogen Absorption of Titanium
Alloys during Etching,
AD- 768 058
- MORREN, W. * * *
Pyroelectric/Integrated Circuit
Infrared Imaging Array Development.
AD- 912 475
- *MOSTOVOY, SHELDON * * *
Fracturing Characteristics of
Adhesive Joints.
AD-A075 541
- MOUNTAIN, ROBERT W. * * *
Fabrication Procedure for Silicon
Membrane X-Ray Lithography Masks.
AD- 769 857
- *MUCCINO, F. R. * * *
SHORT CUT TO PRINTED CIRCUIT
PROTOTYPES,
AD- 626 616
- MUELLER, BRET * * *
- MAW-UEL

UNCLASSIFIED

Acid Etch Characteristics of
Prismless Enamel.
AD-A024 730

*MUELLER, BRETT * * *
Enhancing Retention of Acid Etch
Resin Restorations in Primary
Teeth.
AD-A026 852

*MUELLER, ROBERT A. * * *
GROWTH, PROCESSING AND
CHARACTERIZATION OF BE1A-SILICON
CARBIDE SINGLE CRYSTALS,
AD- 669 099

MULHEARN, T. O. * * *
Measurement of Deformation in Alpha
Brass by Means of an Electrolytic
Thiosulfate Etch.
AD- 742 198

*MUNIR, Z. A. * * *
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

MURRAY, ROYCE W. * * *
Chemically Modified Electrodes.
XIV. Attachment of Reagents to
Oxide-Free Glassy Carbon Surfaces.
Electroactive RF Polymer Films on
Carbon and Platinum Electrodes.
AD-A061 427

NAPOLEON, J. J. * * *
Hyperabrupt Varactor Voltage-
Controlled Oscillators.
AD-A047 522

*NAUMAN, A. * * *
A Geodesic Optical Waveguide Lens
Fabricated by Anisotropic Etching.
AD-A078 202

*NESTER, JAMES F. * * *
THE PREPARATION OF ORIENTED SINGLE
CRYSTAL SPHERES OF INTERMETALLIC
COMPOUNDS BETWEEN THE RARE EARTH
AND IRON GROUP METALS.
AD- 637 803

*NEU, J. T. * * *
Second Surface Thermal Control
Mirrors for Reflection Control.
Volume I.
AD-A034 863

NEUREUTHER, A. R. * * *
Modeling Validation, Techniques and
Applications for X-Ray Lithography.
AD-A042 019

* * *
Line-Profile Resist Development:
Simulation Techniques,
AD-A052 932

NIESSEN, P. * * *
Observations on Grain Boundary
Etching Behavior and Its Relation
to Nonequilibrium Boundary Solute
Enrichment,
AD- 720 013

NOEL, GERALD * * *
IMPROVED THIN-FILM SOLAR CELLS.
AD- 476 696

NOLAN, CHARLES J. * * *
METALLOGRAPHIC TECHNIQUE FOR THE
DEVELOPMENT OF MICROSTRUCTURAL
CONSTITUENTS IN GUN STEEL.
AD- 707 400

*NORR, MARRINER K. * * *
POLISHES AND ETCHES FOR TIN
TELLURIDE, LEAD SULFIDE, LEAD
SELENIDE, AND LEAD TELLURIDE:
SUPPLEMENT.

AD- 634 392 * * *
Carbon Fiber Microstructure,
AD- 740 315

*NOWAK, R. * * *
Chemically Modified Electrodes.
XIV. Attachment of Reagents to
Oxide-Free Glassy Carbon Surfaces.
Electroactive RF Polymer Films on
Carbon and Platinum Electrodes.
AD-A061 427

*NUESE, C. J. * * *
III-V Heterojunction Structures for
Long-Wavelength Injection Laser.
AD-A054 670

NYE, WILLIAM F. * * *
MORPHOLOGICAL FEATURES OF HEXAGONAL
FERRITES,
AD- 653 335

*O'CONNELL, EDWARD P. * * *
DEVELOPMENT OF A MICROELECTRONICS
CAPABILITY AND FACILITY AT RADC.
AD- 484 781

OLDER, R. B. * * *
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 639 068

*OLDHAM, W. G. * * *
THE GROWTH AND ETCHING OF SI
THROUGH WINDOWS IN SiO,
AD- 658 248

OLSEN, G. H. * * *
III-V Heterojunction Structures for
Long-Wavelength Injection Laser.
AD-A054 670

*ORDUNG, P. F. * * *

PERSONAL AUTHOR INDEX-13
UNCLASSIFIED ZOM08

MUE-ORD

UNCLASSIFIED

- ***
Electron Resists.
AD-A044 282
- ORLOVA, L. A. ***
METHOD FOR INCREASING THE
MECHANICAL STRENGTH OF GLASS.
AD- 694 836
- *OSEPCHUK, JOHN M. ***
STUDY OF MICROWAVE GENERATION BY
MEANS OF INTERACTION WITH
ANISOTROPIC MEDIA.
AD- 818 789
- OVENS, ROBERT A. ***
IC Fabrication Using Electron-Beam
Technology.
AD-A061 460
- ***
IC Fabrication Using Electron-Beam
Technology.
AD-A061 721
- *PADNOS, B. N. ***
INTEGRATED SILICON DEVICE
TECHNOLOGY. VOLUME X.
CHEMICAL/METALLURGICAL PROPERTIES
OF SILICON.
AD- 626 985
- *PAK, SUNG-JAE ***
Broad Beam Ion Source Operation
with Four Common Gases.
AD-A077 561
- PAPPIS, J. ***
CHEMICAL VAPOR DEPOSITED MATERIALS
FOR ELECTRON TUBES.
AD- 672 095
- PARIKH, N. M. ***
FRACTURE MECHANISMS IN
POLYCRYSTALLINE NONMETALLIC
- MATERIALS.
AD- 686 301
- *PARKS, M. L. ***
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 639 068
- *PARKS, HOWARD L. ***
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 667 368
- PASIERB, EDWARD F. ***
IMPROVED THIN-FILM SOLAR CELLS.
AD- 476 696
- PAVELCHEK, EDWARD K. ***
The Rate of Dissolution of
Amorphous Silica in Water.
Inaccessibility of Crack Tips in
Glass.
AD- 762 767
- ***
Fracture Strength of Soda-Lime
Glass after Etching.
AD- 783 086
- PAVLICHENKO, V. I. ***
METHODS OF SiC SURFACE AND p-n
JUNCTION TREATMENT.
AD- 697 569
- PEEBLES, L. H., JR. ***
Ion Etching of Amorphous and
Semicrystalline Fibers.
AD-A004 659
- ***
Heterogeneities in Carbon Fibers.
AD-A013 666
- ***
Oxidative Stabilization of Acrylic
Fibers. I. Oxygen Uptake and
General Model.
AD-A055 071
- *PEEL, JOHN L. ***
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
AD-A021 905
- ***
Investigation of Defects and
Impurities in Silicon-on-Sapphire.
AD-A030 777
- PERETZ, D. ***
An Experimental Technique for
Monitoring Dynamic Cracks.
AD- 754 762
- *PERKINS, DAVID M. ***
IMPROVED THIN-FILM SOLAR CELLS.
AD- 476 696
- *PFEIL, WILLIAM H. ***
Manufacturing Methods and
Technology Study Covering Methods
for Manufacturing Electronic
Modules. Manufacturing Methods for
Electronic Modules.
AD- 768 855
- *PHILLIPPI, R. MICHAEL ***
A Study of Fineblanking for the
Manufacture of Fluoric Laminar
Proportional Amplifiers.
AD-A040 230
- PIERSMA, BERNARD J. ***
ON THE ACTIVITY OF PLATINUM
CATALYSTS IN SOLUTION. PART I.
EFFECTS OF THERMAL TREATMENT AND
CHEMICAL ETCHING ON THE Pt-
O/HYDROGEN SPECIFIC REACTION RATE.
AD- 684 490
- PLUMMER, C. E. ***
REDUCING HAND STRAIGHTENING BY CHEM-
MILLING 7075 AND 7178 ALUMINUM
ALLOY IN THE 'W' (OR NATURALLY
- PERSONAL AUTHOR INDEX-14
UNCLASSIFIED ZOM08
- RLO-LUM

UNCLASSIFIED

- AGED) CONDITION.
AD- 677 066
- POLITOV, N. G. * * *
ELECTRONIC AND IONIC PROCESSES IN
SOLIDS, NO. 1, 1964 (SELECTED
ARTICLES).
AD- 675 421
- *PORTISCH, H. * * *
A STUDY OF THE CRYSTAL STRUCTURE OF
TI-AL ALLOYS AND HYDROGEN INDUCED
EXPANSIONS.
AD- 801 472
- PORTISCH, HANSHEINZ * * *
HYDROGEN-INDUCED EXPANSIONS IN
TITANIUM-ALUMINUM ALLOYS,
AD- 678 722
- *PREIST, RUTH C. * * *
GASEOUS PRECISION ETCHING OF
MOLYBDENUM.
AD- 645 201
- *PREKEL, H. L. * * *
ETCH-PITTING CHARACTERISTICS OF
HIGH-PURITY MOLYBDENUM.
AD- 633 601
- PRETRE, S. * * *
A STANDARDIZED METHOD FOR MAKING
NEUTRON FLUENCE MEASUREMENTS BY
FISSION FRAGMENT TRACKS IN
PLASTICS.
AD- 643 540
- *PRICE, C. W. * * *
A REVIEW OF METALLOGRAPHIC
PREPARATION PROCEDURES FOR
BERYLLIUM AND BERYLLIUM ALLOYS,
AD- 674 066
- PRYNE, J. A. * * *
- REYNOLDS, JACK * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A061 460
- * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A061 721
- * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A064 770
- * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A068 656
- * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A082 237
- *RICHARDSON, JAMES H. * * *
ELIMINATION OF DAMAGE TO
METALLOGRAPH OBJECTIVE LENSES BY
ETCHANTS CONTAINING HYDROFLUORIC
ACID.
AD- 664 554
- * * *
CHEMICAL TINTING OF HAFNIUM AND
ZIRCONIUM CARBIDES FOR
METALLOGRAPHIC EXAMINATION,
AD- 671 925
- RIPLING, E. J. * * *
Fracturing Characteristics of
Adhesive Joints.
AD-A075 541
- ROBBINS, ROGER A. * * *
IC Fabrication Using Electron-Beam
Technology.
AD-A061 721
- *ROCHE, ALAIN A. * * *
Surface Characterization of
Chemically Treated Titanium and
- Integral, Low-Cost, High-
Temperature Turbine Feasibility
Demonstrator (Small Laminated Axial
Turbine Program).
AD-A038 674
- *QUINTANA, JACK * * *
Semi-Additive Processes for
Fabrication of Printed Wiring
Boards.
AD-A075 975
- RAMACHANDRAN, T. B. * * *
Production Engineering Measure for
Low Noise Solid-State Oscillator.
AD-A009 776
- *RAU, R. R. * * *
PRODUCTION ENGINEERING MEASURE TO
IMPROVE PRODUCTION TECHNIQUES AND
INCREASE THE RELIABILITY OF THE
2N328A TRANSISTOR.
AD- 614 823
- *REED, EVERETT L. * * *
METALLOGRAPHIC METHODS ETCHING FOR
BAINITIC FINE CARBIDES. A
METALLOGRAPHIC METHOD FOR REVEALING
THE FINE CARBIDES IN BAINITE FORMED
DURING CONTINUOUS COOLING IN A
NICKEL-CHROMIUM-MOLYBDENUM
COMPOSITION.
AD- 629 644
- *REGALBUTO, JOHN A. * * *
Nondestructive Testing Techniques
for Diffusion Bonded Titanium
Structures.
AD- 775 466
- REINBERG, A. R. * * *
Semiconductor-Insulator Structures
for the 1- to 2-Micrometers Region.
AD-A022 970

PERSONAL AUTHOR INDEX-15
UNCLASSIFIED ZOM08

OLI-ROC

AD-A089 500

DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA

F/G 13/8

ETCHING, (U)

SEP 80

UNCLASSIFIED

DTIC/BIB-80-04

NL

3x3
28-1000



			END
			DATE
			FORMED
			DTIC

UNCLASSIFIED

Titanium Alloys. AD-A084 171	ROSENFIELD, A. R. * * *	RYZHIKOV, I. V. * * *
RODERICK, R. * * *	PLASTIC FLOW IN THE LOCALE ON NOTCHES AND CRACKS IN Fe-3Si STEEL UNDER CONDITIONS APPROACHING PLANE STRAIN. AD- 680 123	METHODS OF SiC SURFACE AND P-n JUNCTION TREATMENT. AD- 697 569
FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION, AD- 464 486	ROSS, MARIE C. * * *	*SAHAGIAN, CHARLES S. * * *
RODGERS, T. J. * * *	A Technique for Assessing the Durability of Structural Adhesives. AD-A057 197	CRYSTAL PERFECTION OF ALPHA-AL2O3 AS A FUNCTION OF GROWTH METHOD. AD- 642 040
Advanced Technology for Micropower Integrated Circuits. AD-A005 629	ROWE, JOHN D. * * *	SALAMA, C. A. T. * * *
*RODGERS, THURMAN JOHN * * *	Automated Chromium Plating Line for Gun Barrels. AD-A079 528	V Groove M.O.S. Transistor Technology. AD- 773 296
Advanced Integrated-Circuit Technology for Micropower ICs. (Integrated Circuits). AD-A025 507	RUDAW, PETER S. * * *	Moat-Etched Two-Phase Charge-Coupled Devices, AD- 792 980
*ROGEL, ALEX * * *	PRINCIPLES OF METALLOGRAPHIC ETCHING. AD- 616 786	*SANDELL, R. D. * * *
CHROMIUM MASKS FOR MICROCIRCUITRY. AD- 634 762	*RUDERMAN, WARREN * * *	Preparation of Variable Thickness Microbridges Using Electron Beam Lithography and Ion Etching. AD-A043 668
DURABLE CHROMIUM MASKS FOR PHOTORESIST APPLICATIONS. AD- 647 160	High Performance Pyroelectric Materials. AD-A049 204	*SCHAEFER, D. L. * * *
*ROGERS, K. T. * * *	*RUSSELL, WILLIAM J. * * *	PHOTOMETALLIC PROCESS INVESTIGATION. AD- 635 143
HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 802 516	A Chromate-Free Process for Preparing Aluminum Substrates for Adhesive Bonding -- A Preliminary Study. AD-A029 196	*SCHAEFER, DONALD L. * * *
*ROGERS, KENDAL T. * * *	Chromate-Free Method of Preparing Aluminum Surfaces for Adhesive Bonding. An Etchant Composition of Low Toxicity. AD-A056 241	PHOTOMETALLIC PROCESS INVESTIGATION. AD- 631 330
ROMOE, R. S. * * *	A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry. AD-A065 360	PHOTOMETALLIC PROCESS INVESTIGATION. AD- 809 337
Interaction of Semiconductor Materials with Laser Radiation at 10.6 Micrometers. AD- 753 918		SCHELMORN, ROBERT L. * * *
		HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS. AD- 662 748

PERSONAL AUTHOR INDEX-16
UNCLASSIFIED Z0M08

ODE-CHE

UNCLASSIFIED

SCHILLING, H. * * *
CHEMICAL VAPOR DEPOSITED MATERIALS
FOR ELECTRON TUBES.
AD- 672 095

*SCHMIDT, H. E. * * *
Sputter Damage in GaAs Exposed to
Low Energy Argon Ions.
AD-A080 119

*SCHREYER, GEORGE * * *
Monolithic 20W 2GHz Transistor and
Monolithic 5W 4GHz Transistor.
AD-A068 165

SCHULDINER, SIGMUND * * *
ON THE ACTIVITY OF PLATINUM
CATALYSTS IN SOLUTION. PART I.
EFFECTS OF THERMAL TREATMENT AND
CHEMICAL ETCHING ON THE PT-
O/HYDROGEN SPECIFIC REACTION RATE.
AD- 664 490

SCHULTZ, F. A. * * *
Chemically Modified Electrodes.
XIV. Attachment of Reagents to
Oxide-Free Glassy Carbon Surfaces.
Electroactive RF Polymer Films on
Carbon and Platinum Electrodes.
AD-A061 427

*SCHWARTZ, H. S. * * *
MECHANICAL BEHAVIOR OF BERYLLIUM
WIRE REINFORCED PLASTIC COMPOSITES.
PART II. TIME DEPENDENT MECHANICAL
PROPERTIES.
AD- 674 591

SCHWARZ, S. E. * * *
Properties of Infrared Cat-Whisker
near 10.6 Microns.
AD-A015 492

*SCHWUTKE, GUENTER H.

* * *
Damage Profiles in Silicon and
their Impact on Device Reliability.
AD- 756 250

SCOTT-MONCK, JOHN * * *
Low Reflectivity Solar Cells.
AD-A025 922

SEACRIST, L. S. * * *
Morphology of Thermally Etched
Basal Surfaces of Cadmium Selenide.
AD- 737 946

SENEAR, A. E. * * *

SST Technology Follow-On Program,
Phase I. Compatibility of SST
Materials with Titanium Alloys.
Volume I. Flyaway Materials.
AD- 902 458

*SHAMS, MOHAMMAD KAZEM * * *
Preferential Chemical Etching of
Blazed Gratings in (110)-Oriented
GaAs,
AD-A074 282

*SHAPIRO, S. * * *
REPLICATION OF FINE STRUCTURE IN
MARTENSITE,
AD- 644 652

SHAPIRIO, J. R. * * *
Interaction of Semiconductor
Materials with Laser Radiation at
10.6 Micrometers.
AD- 753 918

SHARIF, L. * * *
HETEROCRYSTAL INTEGRATED CIRCUIT
TECHNIQUES.
AD- 661 042

SHARIF, LOUAY

* * *
INTEGRATED CIRCUITS FOR PORTABLE
RADAR EQUIPMENT.
AD- 653 628

SHELLAN, J. B. * * *
Linearity and Enhanced Sensitivity
of the Shipley AZ-1350B
Photorealist,
AD-A045 389

SHVARTS, K. K. * * *
EFFECT OF DISLOCATION DENSITY ON
THE RADIATION EXPANSION OF THE
VOLUME OF CRYSTALS.
AD- 694 802

*SHY, JAMES DALE * * *
A Study of the Etching
Characteristics of Semiconductor
Materials in RF Plasmas.
AD- 781 831

SILVA, JOSE H. * * *
Fabrication of Elastic Surface
Devices by Chemical Etching.
AD- 758 762

SIMPSON, J. * * *
CHEMICAL VAPOR DEPOSITED MATERIALS
FOR ELECTRON TUBES.
AD- 672 095

SIMPSON, JAMES * * *
STUDY OF MICROWAVE GENERATION BY
MEANS OF INTERACTION WITH
ANISOTROPIC MEDIA.
AD- 818 789

*SINCLAIR, G. M. * * *
ENVIRONMENTALLY ASSISTED CRACK
GROWTH IN GLASS.
AD- 663 885

PERSONAL AUTHOR INDEX-17
UNCLASSIFIED ZOM08

CHI-SIN

UNCLASSIFIED

SITES, J. R. * * *
Sputter Damage in GaAs Exposed to
Low Energy Argon Ions.
AD-A080 119

SITES, JAMES R. * * *
Broad Beam Ion Source Operation
with Four Common Gases.
AD-A077 561

SLOWBA, A. F. * * *
Diffraction Grating Development.
AD-A008 199

SLOTA, STANLEY A. * * *
A Technique for Assessing the
Durability of Structural Adhesives.
AD-A057 197

SMIRNOV, G. V. * * *
INFLUENCE OF ACTIVE GASES ON THE
ELECTROPHYSICAL PROPERTIES OF THE
SURFACE OF SILICON.
AD- 684 014

SMITH, C. W. * * *
PLANAR COAXIAL INTERCONNECTION
TECHNIQUES.
AD- 639 068

SMITH, CRAIG L. * * *
GRAIN BOUNDARY SEGREGATION OF
IMPURITIES IN METALS AND
INTERGRANULAR BRITTLE FRACTURE.
AD- 684 497

*SMITH, HENRY I. * * *
METHOD FOR FABRICATING HIGH
FREQUENCY SURFACE WAVE TRANSDUCERS.
AD- 693 812

Ion Beam Etching of Reflective
Array Filters. * * *

AD- 758 934 * * *
Fabrication Procedure for Silicon
Membrane X-Ray Lithography Masks.
AD- 769 857

Ion-Beam Etching of Surface
Gratings.
AD-A000 502

Techniques for Making Gap-Coupled
Acoustoelectric Devices. * * *
AD-A031 719

Ion Beam Etching. * * *
AD-A041 620

*SMITH, TENNYSON * * *
Surface Treatment for Aluminum
Bonding.
AD-A076 950

SOLOMON, JAMES S. * * *
Surface Characterization of
Titanium and Titanium Alloys. Part
III. Effect on Ti (c.p.) and Ti-
8Mn of Laboratory Chemical
Treatments.
AD-A032 954

SPANN, L. * * *
MICROMINIATURE MONOLITHIC
CROSSPOINT INTERCONNECTIONS.
AD- 664 126

SPEARS, DAVID L. * * *
Fabrication Procedure for Silicon
Membrane X-Ray Lithography Masks.
AD- 769 857

*STAEBLER, CHRISTIAN J., JR * * *
Advanced Chemical Milling
Processes.
AD- 727 620

STARKE, E. A., JR * * *

Thermal Etching of Beta Ti-V
Alloys. * * *
AD- 772 045

*STEELE, S. R. * * *
CHEMICAL VAPOR DEPOSITED MATERIALS
FOR ELECTRON TUBES.
AD- 672 095

Manufacturing Methods and
Technology Engineering High-
Efficiency, High-Power Gallium
Arsenide Read-Type IMPATT Diodes.
Volume I. * * *
AD-A048 578

*STEINMANN, CHARLES * * *
PRODUCTION ENGINEERING MEASURE FOR
SILICON NPN SWITCHING TRANSISTORS.
AD- 637 114

*STELLA, PAUL * * *
Low Reflectivity Solar Cells.
AD-A025 922

STRAUMANIS, M. E. * * *
ANODIC BEHAVIOR OF GAAS SINGLE
CRYSTALS AT INCREASED CURRENT
DENSITIES IN ALKALINE AND ACIDIC
SOLUTIONS.
AD- 652 300

STRONG, JOHN * * *
DEVELOPMENT OF DIFFRACTION GRATINGS
FOR THE FAR ULTRAVIOLET.
AD- 655 098

*SWIGGARD, EDWARD M. * * *
Electronic Materials Technology
(Semiconductors).
AD-A060 363

SWINDAL, J. L. * * *

PERSONAL AUTHOR INDEX-18
UNCLASSIFIED ZOM08

ITE-WIN

UNCLASSIFIED

Sputtering Technology for Improved Electron Devices.
AD-8002 612

SWIRCZYNSKI, JOHN P. * * *

Design and Fabrication of a Thin-Film Ratiometer for Electronic Timer of XM732 Proximity Fuze.
AD-A005 615

TANTAGLIA, FREDERICK E. * * *

Manufacturing Methods and Technology Study Covering Methods for Manufacturing Electronic Modules. Manufacturing Methods for Electronic Modules.
AD-768 855

*TARASOVA, V. A. * * *

CHEMICAL MILLING (DEEP CONTOUR ETCHING).
AD-680 561

*TARPINIAN, ARAM * * *

THE METALLOGRAPHY OF PYROLITIC GRAPHITE.
AD-613 843

*TEAGUE, E. CLAYTON * * *

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.
AD-645 047

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.
AD-653 628

HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES.
AD-661 042

INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.
AD-801 736

TEVIOTDALE, JAMES R.

* * *
ETCHING BEHAVIOR OF IN2O3 GROWN FROM PbO-B2O3.
AD-668 449

* * *
ETCHING AND REGROWTH OF CUPROUS CHLORIDE.
AD-674 757

*TINANOFF, NORMAN * * *

Acid Etch Characteristics of Prismless Enamel.
AD-A024 730
Enhancing Retention of Acid Etch Resin Restorations in Primary Teeth.
AD-A026 852

TINT, G. S. * * *

RESEARCH IN THE GENERAL FIELD OF SUBSTRUCTURE AND DISLOCATION NETWORKS IN METALLIC CRYSTALS.
AD-610 434

*TOCHILIN, EUGENE * * *

A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS.
AD-643 540

TOMASHOV, N. D. * * *

Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching.
AD-768 058

*TOMOZAWA, MINORU * * *

Chemical Durability Improvement and Static Fatigue of Glasses.
AD-A066 978

*TOPFER, MORTON L. * * *

HIGH PERFORMANCE THIN FILMS FOR

PERSONAL AUTHOR INDEX-19
UNCLASSIFIED ZOM08

MICROCIRCUITS.
AD-662 748

*TREGGOLD, R. H. * * *

INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS.
AD-684 965

TREMER, D. A. * * *

Gallium Arsenide Vertical Channel Insulated Gate Field-Effect Transistor.
AD-A047 108

*TSANG, WON-TIEN * * *

Grating Masks Suitable for Ion-Beam Machining and Chemical Etching.
AD-A005 095

Optical Waveguides Fabricated by Preferential Etching.
AD-A013 153

* * *
Growth Characteristics of GaAs-Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels.
AD-A026 425

* * *
Profile and Groove-Depth Control in GaAs Diffraction Gratings Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System.
AD-A026 428

TSENG, CHENG-CHUNG * * *

Optical Waveguides Fabricated by Preferential Etching.
AD-A013 153

*TURLEY, D. M. * * *

The Nature of the White-etching Surface Layers Produced During Reaming Ultra-high Strength Steel.
AD-A076 864

WIR-TUR

UNCLASSIFIED

*TWU, BOR-LONG * * * Properties of Infrared Cat-Whisker near 10.6 Microns. AD-A015 492	Simulation Techniques, AD-A052 932	AD-A081 729 *WAGERS, ROBERT S. * * * Acoustic Ridge Waveguide Technology. AD-A020 745 * * *
*UGAI, YA. A. * * * Certain Chemical Properties of Indium Phosphide, AD- 738 682	Production Engineering Measure for an Electron-Beam Machine and Microwave Transistors. AD- 900 280 * * *	Acoustic Ridge Waveguide Technology. AD-A029 510
UHLMANN, D. R. * * * Ion Etching of Amorphous and Semicrystalline Fibers. AD-A004 859 * * *	IC Fabrication Using Electron-Beam Technology. AD-A061 460 * * *	WAGNER, K. A. * * * The Growth and Characterization of Potassium and Rubidium Azide Single Crystals. AD-A032 619
Heterogeneities in Carbon Fibers. AD-A013 666 * * *	IC Fabrication Using Electron-Beam Technology. AD-A061 721 * * *	*WALES, R. D. * * * ILLUMINATION AND THE PHOTOENGRAVING OF SILICON, AD- 687 644
Oxidative Stabilization of Acrylic Fibers. I. Oxygen Uptake and General Model. AD-A055 071	IC Fabrication Using Electron-Beam Technology. AD-A068 656 * * *	WALLACE, WILLIAM A. * * * BOND STRENGTH CHARACTERISTICS OF ELECTRODEPOSITED NICKEL ON BORON AND SILICON CARBIDE FILAMENTS (REINFORCED COMPOSITES). AD- 688 863
UMANA, M. * * * Chemically Modified Electrodes. XIV. Attachment of Reagents to Oxide-Free Glassy Carbon Surfaces. Electroactive RF Polymer Films on Carbon and Platinum Electrodes. AD-A061 427	IC Fabrication Using Electron-Beam Technology. AD-A082 237 * * *	WALLINE, ROBERT E. * * * Production Engineering Measure for Low Noise Solid-State Oscillator. AD-A009 776
*USOVA, V. V. * * * Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching. AD- 768 058	*VEREZUB, V. N. * * * GRINDING AND POLISHING LARGE PLATES FOR AIRCRAFT SKINS, AD- 688 783	WALSH, D. * * * FIELD EMISSION FROM CADMIUM SULPHIDE, AD- 646 957
*VAHLDEK, FRED W. * * * INVESTIGATION OF SINGLE-CRYSTAL DIMOLYBDENUM CARBIDE. AD- 803 613	VERSURE, R. W. * * * Integral, Low-Cost, High- Temperature Turbine Feasibility Demonstrator (Small Laminated Axial Turbine Program). AD-A038 674	WALSH, THOMAS W. * * * DEVELOPMENT OF A MICROELECTRONICS CAPABILITY AND FACILITY AT RADC. AD- 484 781
VAN DUZER, T. * * * Line-Profile Resist Development	*VIG, JOHN R. * * * Chemically Polished Quartz. AD-A048 077 * * *	
	Etching Studies on Singly and Doubly Rotated Quartz Plates.	
	PERSONAL AUTHOR INDEX-20 ZOM08 UNCLASSIFIED	

TWU-ALS

UNCLASSIFIED

<p>•WALSON, R. P. * * *</p> <p>SPARK EROSION CUTTING OF GERMANIUM.</p> <p>AD- 708 756</p> <p>Dislocation Etch Pitting in High-Purity Niobium.</p> <p>AD- 772 617</p> <p>•WALSON, ROBERT P. * * *</p> <p>Dislocation Velocity Measurements in High Purity Niobium.</p> <p>AD- 769 129</p> <p>•WANG, KARL L. * * *</p> <p>Modal Analysis of SAW Convolver.</p> <p>AD-A056 809</p> <p>•WANG, SHYH * * *</p> <p>Theoretical Study and Experimental Development of Thin-Film Lasers and Modulators for use in Integrated Optics.</p> <p>AD-A004 138</p> <p>Grating Masks Suitable for Ion-Beam Machining and Chemical Etching.</p> <p>AD-A005 095</p> <p>Optical Waveguides Fabricated by Preferential Etching.</p> <p>AD-A013 153</p> <p>Growth Characteristics of GaAs-Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels.</p> <p>AD-A026 425</p> <p>Profile and Groove-Depth Control in GaAs Diffraction Gratings Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System.</p> <p>AD-A026 428</p> <p>Preferential Chemical Etching of Blazed Gratings in (110)-Oriented GaAs.</p> <p>* * *</p>	<p>AD-A074 282</p> <p>•WARNER, S. B. * * *</p> <p>Ion Etching of Amorphous and Semicrystalline Fibers.</p> <p>AD-A004 659</p> <p>Heterogeneities in Carbon Fibers.</p> <p>AD-A013 666</p> <p>Oxidative Stabilization of Acrylic Fibers. I. Oxygen Uptake and General Model.</p> <p>AD-A055 071</p> <p>•WARNER, THEODORE B. * * *</p> <p>ON THE ACTIVITY OF PLATINUM CATALYSTS IN SOLUTION. PART I. EFFECTS OF THERMAL TREATMENT AND CHEMICAL ETCHING ON THE Pt-O/HYDROGEN SPECIFIC REACTION RATE.</p> <p>AD- 664 490</p> <p>•WASSERMAN, MOE S. * * *</p> <p>High Capacitance Thin Film Structures.</p> <p>AD- 863 068</p> <p>WATELSKI, STACY B. * * *</p> <p>INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.</p> <p>AD- 653 628</p> <p>HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES.</p> <p>AD- 661 042</p> <p>INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT.</p> <p>AD- 801 736</p> <p>•WEBSTER, ROGER R. * * *</p> <p>Production Engineering Measure for an Electron-Beam Machine and Microwave Transistors.</p> <p>AD- 900 280</p>	<p>•WEGMAN, RAYMOND F. * * *</p> <p>A Technique for Assessing the Durability of Structural Adhesives.</p> <p>AD-A057 197</p> <p>•WEGMEN, RAYMOND F. * * *</p> <p>A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.</p> <p>AD-A065 360</p> <p>•WEIGAND, BERNARD L. * * *</p> <p>Investigation of Advanced Protective and Antireflection Coatings for Halide Optics.</p> <p>AD-A003 631</p> <p>WHITE, JOSEPH P. * * *</p> <p>5-Kilowatt, 1-Kilovolt, Laminated Sonar Transistor.</p> <p>AD- 860 343</p> <p>WHITE, WILLIAM E. * * *</p> <p>ON THE USE OF COLOUR ETCHING TECHNIQUES FOR STAINLESS STEELS (ueber die Anwendung von Farbaetzungen bei Rostfreien Staehlen).</p> <p>AD- 699 723</p> <p>•WHITING, H. A. * * *</p> <p>REDUCING HAND STRAIGHTENING BY CHEM-MILLING 7075 AND 7178 ALUMINUM ALLOY IN THE 'W' (OR NATURALLY AGED) CONDITION.</p> <p>AD- 677 066</p> <p>•WIEDERHORN, S. W. * * *</p> <p>FRACTURE OF SAPPHIRE.</p> <p>AD- 696 910</p> <p>WIESNER, SIDNEY * * *</p> <p>SILICON, PNP, MEKA TRANSISTOR TYPES</p>
---	---	--

PERSONAL AUTHOR INDEX-21
UNCLASSIFIED
ZOM08

WAL-IES

UNCLASSIFIED

- JAN 2N328A AND JAN 2N329A.
AD- 636 762 * * *
- SILICON, PNP, MEXA TRANSISTOR.
TYPES 2N328A JAN AND 2N329A JAN.
AD- 637 020 * * *
- WILCOX, WILLIAM R.
* * *
- ETCHING AND REGROWTH OF CUPROUS
CHLORIDE.
AD- 674 757 * * *
- WILKINSON, KENNETH D.
* * *
- RF Sputter Etching of Al, SiO₂, and
Photoresist.
AD- 757 878 * * *
- WILLIAMS, JOHN R.
* * *
- PRODUCTION ENGINEERING MEASURE TO
IMPROVE PRODUCTION TECHNIQUES AND
TO INSURE THE RELIABILITY OF THE
C600 SERIES FIELD EFFECT
TRANSISTORS.
AD- 606 477 * * *
- WILLIAMSON, RICHARD C.
* * *
- Ion Beam Etching of Reflective
Array Filters.
AD- 758 934 * * *
- Ion-Beam Etching of Surface
Gratings.
AD-A000 502 * * *
- Surface-Wave Resonators Using
Grooved Reflectors.
AD-A017 356 * * *
- WILLIAMSON, RONALD A.
* * *
- IC Fabrication Using Electron-Beam
Technology.
AD-A061 460 * * *
- WILSON, FRANK M.
* * *
- RESEARCH ON RESIN-IMPREGNATED.
* * *
- COLLIMATED BORON FILAMENTS AND
IMPROVED HIGH-MODULUS, HIGH-
STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816 * * *
- WITHROW, S. P.
* * *
- ENVIRONMENTALLY ASSISTED CRACK
GROWTH IN GLASS.
AD- 663 885 * * *
- WOHLGEMUTH, JOHN H.
* * *
- Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431 * * *
- WOLFF, G. A.
* * *
- THE INVESTIGATION OF SILICON
CARBIDE BY A TRAVELLING SOLVENT
METHOD.
AD- 654 305 * * *
- WOOD, GWENDOLYN B.
* * *
- Design and Fabrication of a Thin-
Film Radiometer for Electronic
Timer of XM732 Proximity Fuze.
AD-A005 615 * * *
- WRICK, V. L.
* * *
- Indium Phosphide for High Frequency
Power Transistors.
AD-A079 812 * * *
- WRIGLEY, C. Y.
* * *
- Nonreflecting Vertical Junction
Silicon Solar Cell Optimization.
AD-A064 431 * * *
- WU, E. M.
* * *
- An Experimental Technique for
Monitoring Dynamic Cracks.
AD- 754 762 * * *
- WU, K. C.
* * *
- Development of Corrosion Resistant
Surface Treatments for Aluminum
Alloys for Spot-Weld Bonding.
AD-8008 190 * * *
- VARIV, A.
* * *
- Linearity and Enhanced Sensitivity
of the Shipley AZ-1350B
Photoresist.
AD-A045 389 * * *
- YUAN, S.
* * *
- MICROMINIATURE MONOLITHIC
CROSSPOINT INTERCONNECTIONS.
AD- 664 126 * * *
- ZERNIKE, FRITS
* * *
- Thin Film Optical Waveguide
Technology.
AD- 919 567 * * *

PERSONAL AUTHOR INDEX-22
UNCLASSIFIED ZOM08

ILC-ZER

UNCLASSIFIED

TITLE INDEX

5-Kilowatt, 1-Kilovolt, Laminated Sonar Transistor. AD- 860 343	AD- 747 019	Certain Chemical Properties of Indium Phosphide. AD- 738 682
300 C SEMICONDUCTOR FOR POWER DEVICES. AD- 815 000	ANODIC BEHAVIOR OF GAAS SINGLE CRYSTALS AT INCREASED CURRENT DENSITIES IN ALKALINE AND ACIDIC SOLUTIONS. AD- 652 300	CHARGED PARTICLE TRACKS IN POLYMERS NO. 7: SENSITIVITY ENHANCEMENT OF LEXAN, AD- 682 922
Acid Etch Characteristics of Prismless Enamel. AD-A024 730	Anodic Etching - A Method of Detecting Grinding Burns on Chromium Plated Steel Parts. AD-A017 689	CHEMICAL BEHAVIOUR OF SEMICONDUCTORS: ETCHING CHARACTERISTICS. AD- 633 185
Acoustic Ridge Waveguide Technology. AD-A020 745	Anodize Optimization and Adhesive Evaluations for Repair Applications. AD-A061 758	Chemical Durability Improvement and Static Fatigue of Glasses. AD-A066 978
Acoustic Ridge Waveguide Technology. AD-A029 510	APPLICATION OF THE POTENTIAL POLARIZATION IN THE STUDY AND IN THE METALLOGRAPHY OF CORROSION RESISTANT STEELS. AD- 841 860	CHEMICAL MILLING (DEEP CONTOUR ETCHING). AD- 680 561
The Adsorption of CO on Planar and Oxygen-Etched Silicon Surfaces. AD-A060 127	AU-ZNTE SCHOTTKY BARRIER FABRICATION BY LOW-ENERGY ION ETCHING TECHNIQUES. AD- 833 283	CHEMICAL MILLING HIGH-TEMPERATURE ALLOYS AND STEELS. AD- 829 039
Advanced Chemical Milling Processes. AD- 727 620	Auger Spectroscopy Studies of the Oxidation of Amorphous and Crystalline Germanium. AD-A013 949	CHEMICAL TINTING OF HAFNIUM AND ZIRCONIUM CARBIDES FOR METALLOGRAPHIC EXAMINATION. AD- 671 925
Advanced Inertial Technologies. Volume I. AD- 911 088	Automated Chromium Plating Line for Gun Barrels. AD-A079 528	CHEMICAL VAPOR DEPOSITED MATERIALS FOR ELECTRON TUBES. AD- 672 095
Advanced Integrated-Circuit Technology for Micropower ICs. (Integrated Circuits). AD-A025 507	BOND STRENGTH CHARACTERISTICS OF ELECTRODEPOSITED NICKEL ON BORON AND SILICON CARBIDE FILAMENTS (REINFORCED COMPOSITES). AD- 688 863	Chemically Modified Electrodes. XIV. Attachment of Reagents to Oxide-Free Glassy Carbon Surfaces. Electroactive RF Polymer Films on Carbon and Platinum Electrodes. AD-A061 427
Advanced Technology for Micropower Integrated Circuits. AD-A005 629	Broad Beam Ion Source Operation with Four Common Gases. AD-A077 561	Chemically Polished Quartz. AD-A048 077
ADVANCEMENTS IN SPACE FLIGHT HARDWARE THROUGH CHEMICAL MILLING. AD- 804 296	Carbon Fiber Microstructure. AD- 740 315	THE CHLORINE ETCHING OF SINGLE CRYSTAL SILICON. AD- 681 798
Alternate Production Processes for Fuse Pinions. AD- 777 000		Chromate-Free Method of Preparing Aluminum Surfaces for Adhesive
Analysis of Aluminum Oxide Films on Silicon.		

TITLE INDEX-1
UNCLASSIFIED ZOM08

UNCLASSIFIED

<p>Bonding. An Etchant Composition of Low Toxicity. AD-A056 241</p> <p>A Chromate-Free Process for Preparing Aluminum Substrates for Adhesive Bonding -- A Preliminary Study. AD-A029 196</p> <p>CHROMIUM MASKS FOR MICROCIRCUITRY. AD- 634 762</p> <p>Chronic Oxygen Electrodes - A Feasibility Study. AD- 748 422</p> <p>CONTINUOUS PROCESSES FOR FUNCTIONAL ELECTRONIC BLOCKS. AD- 476 469</p> <p>Coordination Chemistry and Kinetics of Preferential Etching on Surfaces of TiO₂ (Rutile). AD- 759 259</p> <p>Criteria for Successful Composite Restorations. AD-A071 064</p> <p>CRYSTAL PERFECTION OF ALPHA-AL2O₃ AS A FUNCTION OF GROWTH METHOD. AD- 642 040</p> <p>Damage Profiles in Silicon and their Impact on Device Reliability. AD- 756 250</p> <p>Design and Fabrication of a Thin-Film Ratiometer for Electronic Timer of XM732 Proximity Fuze. AD-A005 615</p> <p>DEVELOPMENT OF A MICROELECTRONICS CAPABILITY AND FACILITY AT RADC. AD- 484 781</p> <p>Development of Corrosion Resistant Surface Treatments for Aluminum Alloys for Spot-Weld Bonding. AD-8008 190</p>	<p>DEVELOPMENT OF DIFFRACTION GRATINGS FOR THE FAR ULTRAVIOLET. AD- 655 098</p> <p>DEVELOPMENT OF GALLIUM ARSENIDE-PHOSPHIDE GRADED BAND-GAP BASE TRANSISTOR STRUCTURES. AD- 467 531</p> <p>Diffraction Grating Development. AD-A008 199</p> <p>DIRECT SOLUTION OF COMPLEX CRYSTAL STRUCTURES BY ELECTRON MICROSCOPY. AD- 713 554</p> <p>Dislocation Etch Pitting in High-Purity Niobium. AD- 772 617</p> <p>DISLOCATION ETCHING OF CYCLOTRIMETHYLENE TRINITRAMINE CRYSTALS. AD- 689 936</p> <p>Dislocation Velocity Measurements in High Purity Niobium. AD- 769 129</p> <p>A Double-Etching Technique for Steel. Microstructural Analysis of Steel. AD-A082 873</p> <p>DURABLE CHROMIUM MASKS FOR PHOTORESIST APPLICATIONS. AD- 647 160</p> <p>AN ECONOMICAL FLAT PACKAGE FOR INTEGRATED CIRCUITS. AD- 450 549</p> <p>Effect of Alloying Components on the Hydrogen Absorption of Titanium Alloys during Etching. AD- 768 058</p> <p>EFFECT OF DISLOCATION DENSITY ON THE RADIATION EXPANSION OF THE VOLUME OF CRYSTALS. AD- 694 802</p>	<p>EFFECT OF KILOVOLT ELECTRONS ON THE ETCH RATE OF Al2O₃ AND Ta2O₅. AD- 696 861</p> <p>EFFECT ON ETCH RATE OF OXIDE SURFACES AFTER ELECTRON BOMBARDMENT. AD- 833 329</p> <p>The Effects of Surface Structural Properties on Laser-Induced Damage at 1.06 Micrometers. AD-A019 325</p> <p>ELECTROCHEMICAL DENSER EFFECT IN SEMICONDUCTORS. AD- 614 180</p> <p>AN ELECTRON-MICROSCOPICAL EXAMINATION OF GRAYSON'S MICRO-RULINGS. AD- 699 991</p> <p>Electron Resists. AD-A044 282</p> <p>ELECTRONIC AND IONIC PROCESSES IN SOLIDS. NO. 1, 1964 (SELECTED ARTICLES). AD- 675 421</p> <p>Electronic Materials Technology (Semiconductors). AD-A060 363</p> <p>ELIMINATION OF DAMAGE TO METALLOGRAPH OBJECTIVE LENSES BY ETCHANTS CONTAINING HYDROFLUORIC ACID. AD- 664 554</p> <p>Enhanced Heteroepitaxy. AD-A075 514</p> <p>Enhancing Retention of Acid Etch Resin Restorations in Primary Teeth. AD-A026 852</p> <p>ENVIRONMENTALLY ASSISTED CRACK GROWTH IN GLASS.</p>
--	--	--

TITLE INDEX-2
UNCLASSIFIED ZOMOB

ACH-ENV

AD- 663 885

ETCH-PITTING CHARACTERISTICS OF HIGH-PURITY MOLYBDENUM.

AD- 633 601

ETCHING AND REGROWTH OF CUPROUS CHLORIDE,

AD- 674 757

ETCHING BEHAVIOR OF IN2O3 GROWN FROM PbO-B2O3,

AD- 668 449

Etching Studies on Singly and Doubly Rotated Quartz Plates.

AD-A081 729

Evaluation of Non-Chromated Etch for Aluminum Alloys (p-Etch).

AD-A064 373

An Experimental Technique for Monitoring Dynamic Cracks,

AD- 754 762

Fabrication of Elastic Surface Devices by Chemical Etching.

AD- 758 762

FABRICATION OF GLASS MASKS, AND THEIR APPLICATION TO THIN-FILM CIRCUIT DEPOSITION,

AD- 464 486

Fabrication procedure for Silicon Membrane X-Ray Lithography Masks.

AD- 719 857

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part I. Surface Chemistry of Failure Surfaces.

AD-A081 727

Failure Mechanisms and Interphase Chemistry of Gold Films on Ti6Al4V. Part II. Etching of Ti6Al4V and its Effect on Evaporated Gold and Commercial Adhesive Adhesion.

AD-A081 728

FIELD EMISSION FROM CADMIUM SULPHIDE.

AD- 646 957

FRACURE MECHANISMS IN POLYCRYSTALLINE NONMETALLIC MATERIALS.

AD- 686 301

FRACURE OF SAPPHIRE,

AD- 696 910

Fracture Strength of Soda-Lime Glass after Etching.

AD- 783 086

Fracturing Characteristics of Adhesive Joints.

AD-A075 541

Fresnel Lens and Beam Control in Optical Waveguide.

AD-A080 106

Gallium Arsenide Vertical Channel Insulated Gate Field-Effect Transistor.

AD-A047 108

Gas Washing of Fracture Surfaces by Explosive Detonation Products,

AD-A044 951

GASEOUS PRECISION ETCHING OF MOLYBDENUM.

AD- 645 201

A Geodesic Optical Waveguide Lens Fabricated by Anisotropic Etching,

AD-A078 202

GRAIN BOUNDARY SEGREGATION OF IMPURITIES IN METALS AND INTERGRANULAR BRITTLE FRACTURE.

AD- 684 497

Grating Masks Suitable for Ion-Beam Machining and Chemical Etching,

AD-A005 095

GRINDING AND POLISHING LARGE PLATES

FOR AIRCRAFT SKINS.

AD- 688 783

The Growth and Characterization of Potassium and Rubidium Azide Single Crystals,

AD-A032 619

THE GROWTH AND ETCHING OF Si THROUGH WINDOWS IN SiO₂,

AD- 658 248

Growth Characteristics of GaAs-Ga(1-x)Al(x)As Structures Fabricated by Liquid-Phase Epitaxy Over Preferentially Etched Channels,

AD-A026 425

GROWTH, PROCESSING AND CHARACTERIZATION OF BETA-SILICON CARBIDE SINGLE CRYSTALS,

AD- 669 099

HETEROCRYSTAL INTEGRATED CIRCUIT TECHNIQUES.

AD- 661 042

Heterogeneities in Carbon Fibers.

AD-A013 666

High Capacitance Thin Film Structures.

AD- 863 068

HIGH-INFORMATION-DENSITY STORAGE SURFACES.

AD- 668 242

HIGH-INFORMATION-DENSITY STORAGE SURFACES.

AD- 673 143

HIGH-INFORMATION-DENSITY STORAGE SURFACES.

AD- 681 892

HIGH-INFORMATION-DENSITY STORAGE SURFACES.

AD- 688 178

HIGH-INFORMATION-DENSITY STORAGE

TITLE INDEX-3
UNCLASSIFIED **ZOMOB**

ETC-HIG

UNCLASSIFIED

SURFACES. AD- 691 130	IC Fabrication Using Electron-Beam Technology. AD-A061 721	INTEGRATED LOGIC NETWORKS. AD- 680 411
HIGH-INFORMATION-DENSITY STORAGE SURFACES. AD- 802 516	III-V Heterojunction Structures for Long-Wavelength Injection Laser. AD-A054 870	INTEGRATED SILICON DEVICE TECHNOLOGY. VOLUME X. CHEMICAL/METALLURGICAL PROPERTIES OF SILICON. AD- 626 985
High Performance Pyroelectric Materials. AD-A049 204	ILLUMINATION AND THE PHOTOENGRAVING OF SILICON. AD- 687 644	Interaction of Semiconductor Materials with Laser Radiation at 10.6 Micrometers. AD- 753 918
HIGH PERFORMANCE THIN FILMS FOR MICROCIRCUITS. AD- 662 748	The Implantation of Impurity Ions and Proton Bombardment in Indium Phosphide. AD-A080 144	Investigation of Advanced Protective and Antireflection Coatings for Halide Optics. AD-A003 631
High-Reliability, Low-Cost Integrated Circuits. AD-A045 089	IMPROVED THIN-FILM SOLAR CELLS. AD- 476 696	Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A021 905
High-Reliability, Low-Cost Integrated Circuits. AD-A049 763	INCREASED RESISTANCE OF CRYSTAL UNITS AT OSCILLATOR NOISE LEVELS. AD- 658 947	Investigation of Defects and Impurities in Silicon-on-Sapphire. AD-A030 777
High Temperature Microscopy of Porcelain-Precious Alloys. AD-A039 647	Indium Phosphide for High Frequency Power Transistors. AD-A079 812	INVESTIGATION OF MATERIALS SUITABLE FOR THE FABRICATION OF SPACE CHARGE AMPLIFIERS. AD- 684 965
HYDROGEN-INDUCED EXPANSIONS IN TITANIUM-ALUMINUM ALLOYS. AD- 678 722	INFLUENCE OF ACTIVE GASES ON THE ELECTROPHYSICAL PROPERTIES OF THE SURFACE OF SILICON. AD- 684 014	THE INVESTIGATION OF SILICON CARBIDE BY A TRAVELLING SOLVENT METHOD. AD- 654 305
Hyperabrupt Varactor Voltage-Controlled Oscillators. AD-A047 522	Integral, Low-Cost, High-Temperature Turbine Feasibility Demonstrator (Small Laminated Axial Turbine Program). AD-A038 674	INVESTIGATION OF SINGLE-CRYSTAL DIMOLYBDENUM CARBIDE. AD- 803 613
IC Fabrication Using Electron-Beam Technology. AD-A061 460	INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 645 047	Ion Beam Etching. AD-A041 620
IC Fabrication Using Electron-Beam Technology. AD-A064 770	INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 653 628	Ion Beam Etching of Reflective Array Filters. AD- 758 934
IC Fabrication Using Electron-Beam Technology. AD-A068 656	INTEGRATED CIRCUITS FOR PORTABLE RADAR EQUIPMENT. AD- 801 736	Ion-Beam Etching of Surface Gratings. AD-A000 502
IC Fabrication Using Electron-Beam Technology. AD-A082 237		

TITLE INDEX-4
UNCLASSIFIED ZOMOB

HIG-ION

UNCLASSIFIED

Ion Beam Superpolishing of Metal Mirrors for High Energy Lasers. AD-A031 106	Brass by Means of an Electrolytic Thiosulfate Etch. AD- 742 198	MICROMINIATURE MONOLITHIC CROSSPOINT INTERCONNECTIONS. AD- 664 126
Ion Etching of Amorphous and Semicrystalline Fibers. AD-A004 659	MECHANICAL BEHAVIOR OF BERYLLIUM WIRE REINFORCED PLASTIC COMPOSITES. PART II. TIME DEPENDENT MECHANICAL PROPERTIES. AD- 674 591	A MINIATURE MONOSTRIP NANOSECOND PULSE DELAY LINE. AD- 650 977
Light Emitting Diodes for Fiber Optic Communications. AD-A043 727	MECHANISMS OF ATTACK ON GLASSES IN AQUEOUS MEDIA. AD- 641 500	Moat-Etched Two-Phase Charge-Coupled Devices. AD- 782 980
Light Emitting Diodes for Fiber Optic Communications. AD-A068 348	Metal-Insulator-Semiconductor Studies of Lead Telluride. AD-A038 996	Modal Analysis of SAW Convolver. AD-A056 809
Light Emitting Diodes for Fiber Optic Communications. AD-A071 158	METALLOGRAPHIC METHODS ETCHING FOR BAINITIC FINE CARBIDES. A METALLOGRAPHIC METHOD FOR REVEALING THE FINE CARBIDES IN BAINITE FORMED DURING CONTINUOUS COOLING IN A NICKEL-CHROMIUM-MOLYBDENUM COMPOSITION. AD- 629 644	Mode Control and Related Studies of VHF Quartz Filter Crystals. AD- 736 758
Line-Profile Resist Development Simulation Techniques. AD-A052 932	METALLOGRAPHIC TECHNIQUE FOR THE DEVELOPMENT OF MICROSTRUCTURAL CONSTITUENTS IN GUN STEEL. AD- 707 400	Modeling Validation, Techniques and Applications for X-Ray Lithography. AD-A042 019
Linearity and Enhanced Sensitivity of the Shipley AZ-1350B Photoresist. AD-A045 389	THE METALLOGRAPHY OF PYROLITIC GRAPHITE. AD- 613 643	Monolithic 20W 2GHz Transistor and Monolithic 5W 4GHz Transistor. AD-A068 165
LONG-WAVELENGTH INFRARED Pb(1-X)Sn(X)Te Diode Lasers. AD- 673 601	METHOD FOR FABRICATING HIGH FREQUENCY SURFACE WAVE TRANSDUCERS. AD- 693 812	MORPHOLOGICAL FEATURES OF HEXAGONAL FERRITES. AD- 653 335
Low Reflectivity Solar Cells. AD-A025 922	METHOD FOR INCREASING THE MECHANICAL STRENGTH OF GLASS. AD- 694 836	Morphology of Thermally Etched Basal Surfaces of Cadmium Selenide. AD- 737 946
Manufacturing Methods and Technology Engineering High-Efficiency, High-Power Gallium Arsenide Read-Type IMPATT Diodes. Volume I. AD-A048 578	A METHOD OF MAKING MESH FILTERS FROM MATERIALS AND ALLOYS. AD- 635 828	The Nature of the White-etching Surface Layers Produced During Reaming Ultra-high Strength Steel. AD-A076 864
Manufacturing Methods and Technology Study Covering Methods for Manufacturing Electronic Modules. AD- 768 855	METHODS OF SiC SURFACE AND p-n JUNCTION TREATMENT. AD- 697 569	Nondestructive Testing Techniques for Diffusion Bonded Titanium Structures. AD- 775 466
Measurement of Deformation in Alpha		Nonreflecting Vertical Junction Silicon Solar Cell Optimization. AD-A064 431
		Observations on Grain Boundary Etching Behavior and Its Relation

TITLE INDEX-5
UNCLASSIFIED ZOM08

ION-08S

UNCLASSIFIED

to Nonequilibrium Boundary Solute Enrichment.
AD- 720 013

ON THE ACTIVITY OF PLATINUM CATALYSTS IN SOLUTION. PART I. EFFECTS OF THERMAL TREATMENT AND CHEMICAL ETCHING ON THE Pt-O/HYDROGEN SPECIFIC REACTION RATE.
AD- 664 490

ON THE SLOPE OF ETCH PITS.
AD- 665 280

ON THE USE OF COLOUR ETCHING TECHNIQUES FOR STAINLESS STEELS (ueber die Anwendung von Farbaetzungen bei Rostfreien Staehlen).
AD- 699 723

Optical Waveguides Fabricated by Preferential Etching.
AD-A013 153

Oxidative Stabilization of Acrylic Fibers. I. Oxygen Uptake and General Model.
AD-A055 071

PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 631 330

PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 635 143

PHOTOMETALLIC PROCESS INVESTIGATION.
AD- 809 337

PLANAR COAXIAL INTERCONNECTION TECHNIQUES.
AD- 639 068

PLANAR COAXIAL INTERCONNECTION TECHNIQUES.
AD- 667 368

Plasma Babbitt Surfacing of the

Steel Base of Bearings.
AD- 750 517

PLASTIC FLOW IN THE LOCALE ON NOTCHES AND CRACKS IN Fe-3Si STEEL UNDER CONDITIONS APPROACHING PLANE STRAIN.
AD- 680 123

POLISHES AND ETCHES FOR TIN TELLURIDE, LEAD SULFIDE, LEAD Selenide, AND LEAD TELLURIDE: SUPPLEMENT.
AD- 634 392

Preferential Chemical Etching of Blazed Gratings in (110)-Oriented GaAs.
AD-A074 282

THE PREPARATION OF ORIENTED SINGLE CRYSTAL SPHERES OF INTERMETALLIC COMPOUNDS BETWEEN THE RARE EARTH AND IRON GROUP METALS.
AD- 637 803

Preparation of Variable Thickness Microbridges Using Electron Beam Lithography and Ion Etching.
AD-A043 668

Pretreatment of Titanium for Subsequent Electrodeposition of Metal.
AD- 748 525

PRINCIPLES OF METALLOGRAPHIC ETCHING.
AD- 616 786

Production Engineering Measure for an Electron-Beam Machine and Microwave Transistors.
AD- 900 280

Production Engineering Measure for Low Noise Solid-State Oscillator.
AD-A009 776

PRODUCTION ENGINEERING MEASURE FOR SILICON NPN SWITCHING TRANSISTORS.

AD- 637 114

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS.
AD- 619 295

PRODUCTION ENGINEERING MEASURE FOR SILICON OVERLAY TRANSISTORS.
AD- 635 814

PRODUCTION ENGINEERING MEASURE FOR TYPE CR-(XM-60)/U CRYSTAL UNITS.
AD- 642 425

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AAND INCREASE THE RELIABILITY OF THE 2N328A TRANSISTOR.
AD- 614 823

PRODUCTION ENGINEERING MEASURE TO IMPROVE PRODUCTION TECHNIQUES AND TO INSURE THE RELIABILITY OF THE C600 SERIES FIELD EFFECT TRANSISTORS.
AD- 606 477

PRODUCTION ENGINEERING MEASURE TO INCREASE THE RELIABILITY OF THE TRANSISTOR TYPE 22N2034.
AD- 606 191

Profile and Groove-Depth Control in GaAs Diffraction Gratings Fabricated by Preferential Chemical Etching in H2SO4-H2O2-H2O System.
AD-A026 428

Properties of Infrared Cat-Whisker near 10.6 Microns.
AD-A015 492

Pyroelectric/Integrated Circuit Infrared Imaging Array Development.
AD- 912 475

QUARTERLY BULLETIN OF THE DIVISION OF MECHANICAL ENGINEERING AND THE NATIONAL AERONAUTICAL establishment.
AD- 689 274

TITLE INDEX-6
UNCLASSIFIED ZOM08

ON -QUA

UNCLASSIFIED

Radiography with the Fission Neutrons from Californium-252.
AD-A045 362

RANGE AND DEPTH DOSE DISTRIBUTION OF LOW ENERGY CHARGED PARTICLES IN DOSIMETRY GLASSES.
AD- 642 794

The Rate of Dissolution of Amorphous Silica in Water. Inaccessibility of Crack Tips in Glass.
AD- 762 767

REDUCING HAND STRAIGHTENING BY CHEM-MILLING 7075 AND 7178 ALUMINUM ALLOY IN THE 'W' (OR NATURALLY AGED) CONDITION.
AD- 677 066

Reliability Study of Doped Aluminum Conductor Films.
AD-A050 677

Replica Techniques for Transmission Electron Microscopy.
AD-A021 891

REPLICATION OF FINE STRUCTURE IN MARTENSITE.
AD- 644 652

RESEARCH IN THE GENERAL FIELD OF SUBSTRUCTURE AND DISLOCATION NETWORKS IN METALLIC CRYSTALS.
AD- 610 434

Research on Microwave Junction Gate Field Effect Transistors.
AD-A080 031

RESEARCH ON PHOTOVOLTAIC CELLS.
AD- 621 454

RESEARCH ON RESIN-IMPREGNATED, COLLIMATED BORON FILAMENTS AND IMPROVED HIGH-MODULUS, HIGH-STRENGTH FILAMENTS AND COMPOSITES.
AD- 477 816

A REVIEW OF METALLOGRAPHIC PREPARATION PROCEDURES FOR BERYLLIUM AND BERYLLIUM ALLOYS.
AD- 674 066

RF Sputter Etching of Al, SiO₂, and Photoresist.
AD- 757 878

A Round-Robin Evaluation of Adhesive Bonding Processes Related to the Shelter Industry.
AD-A065 360

Second Surface Thermal Control Mirrors for Reflection Control. Volume I.
AD-A034 863

Semi-Additive Processes for Fabrication of Printed Wiring Boards.
AD-A075 975

Semiconductor-Insulator Structures for the 1- to 2-Micrometers Region.
AD-A022 970

SEMICONDUCTOR MATERIALS.
AD- 625 676

SHORT CUT TO PRINTED CIRCUIT PROTOTYPES.
AD- 626 616

SILICON, PNP, MEXA TRANSISTOR, TYPES 2N328A JAN AND 2N329A JAN.
AD- 637 020

SILICON, PNP, MEXA TRANSISTOR TYPES JAN 2N328A AND JAN 2N329A.
AD- 636 762

Silicone Diode Target Tube Development.
AD- 912 287

SPARK EROSION CUTTING OF GERMANIUM.
AD- 708 756

Sputter Damage in GaAs Exposed to

Low Energy Argon Ions.
AD-A080 119

Sputtering Technology for Improved Electron Devices.
AD-B002 612

SST Technology Follow-On Program. Phase I. Compatibility of SST Materials with Titanium Alloys. Volume I. Flyaway Materials.
AD- 902 458

A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS.
AD- 643 540

A STUDY OF CHARGED PARTICLE TRACKS IN CELLULOSE NITRATE.
AD- 666 543

A STUDY OF DISLOCATION STRUCTURE OF SUBBOUNDARIES IN MOLYBDENUM SINGLE CRYSTALS.
AD- 675 563

A Study of Fineblanking for the Manufacture of Fluoric Laminar Proportional Amplifiers.
AD-A040 230

A STUDY OF LITHIUM FLUORIDE ETCH MORPHOLOGIES USING SILICA GEL.
AD- 660 381

STUDY OF MICROWAVE GENERATION BY MEANS OF INTERACTION WITH ANISOTROPIC MEDIA.
AD- 818 789

A Study of RF Sputter Etching in an Argon Plasma Using Silicon as a Target.
AD- 742 436

A STUDY OF THE CRYSTAL STRUCTURE OF TI-AL ALLOYS AND HYDROGEN INDUCED EXPANSIONS.
AD- 801 472

TITLE INDEX-7
UNCLASSIFIED ZOM08

RAD-A S

UNCLASSIFIED

A Study of the Etching Characteristics of Semiconductor Materials in RF Plasmas.
AD-781 831

Study of the Switching Mechanism in Bistable Amplifiers with Application to Their Development, Optimization and Construction.
AD-A036 266

Surface Characterization of Chemically Treated Titanium and Titanium Alloys.
AD-A084 171

Surface Characterization of Titanium and Titanium Alloys. Part II. Effect on Ti-6Al-4V Alloy of Laboratory Chemical Treatments.
AD-A027 134

Surface Characterization of Titanium and Titanium Alloys. Part III. Effect on Ti (C.P.) and Ti-8Mn of Laboratory Chemical Treatments.
AD-A032 954

Surface Treatment for Aluminum Bonding.
AD-A076 950

Surface-Wave Resonators Using Grooved Reflectors.
AD-A017 356

Tantalum Nitride Thin-Film Ratiometer for Electronic Timer of XM732 Proximity Fuze.
AD-A020 670

A Technique for Assessing the Durability of Structural Adhesives.
AD-A057 197

Techniques for Making Gap-Coupled Acoustoelectric Devices.
AD-A031 719

Theoretical Study and Experimental

Development of Thin-Film Lasers and Modulators for use in Integrated Optics.
AD-A004 138

Thermal Etching of Beta Ti-V Alloys.
AD-772 045

THIN FILM CIRCUIT TECHNIQUES.
AD-654 427

Thin-Film Dye Laser with Etched Cavity.
AD-A033 803

Thin Film Hybrid Pulse Width Discriminator Circuit Fabrication.
AD-900 343

Thin Film Optical Waveguide Technology.
AD-919 567

TRANSISTOR, VHF, SILICON, POWER (10W-500MC).
AD-622 879

Transmission Microscopy of Ion-Bombardment Thinned Boron Carbide.
AD-715 857

V Groove M.O.S. Transistor Technology.
AD-773 296

Vapor-Phase Etching and Polishing of GaAs Using Arsenic Trichloride.
AD-A051 568

The Work of the State Institute of Glass in the Area of Glass Hardening.
AD-A014 053

TITLE INDEX-8
UNCLASSIFIED ZOMOB

A S-THE